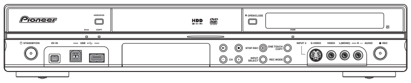
Pioneer sound.vision.soul

Service Manual


DVR-LX70

ORDER NO.
RRV3686

HDD/DVD RECORDER

DVR-LX70

THIS MANUAL IS APPLICABLE TO THE FOLLOWING MODEL(S) AND TYPE(S).

Model	Type	Power Requirement	Region No.	**Serial No.** Please confirm 3rd & 4th alphabetical letters.
DVR-LX70	TLXV	AC 110 V to 240 V	3	&&DL######$$
DVR-LX70	TFXV	AC 110 V to 240 V	3	&&DL######$$

For details, refer to "Important Check Points for good servicing".

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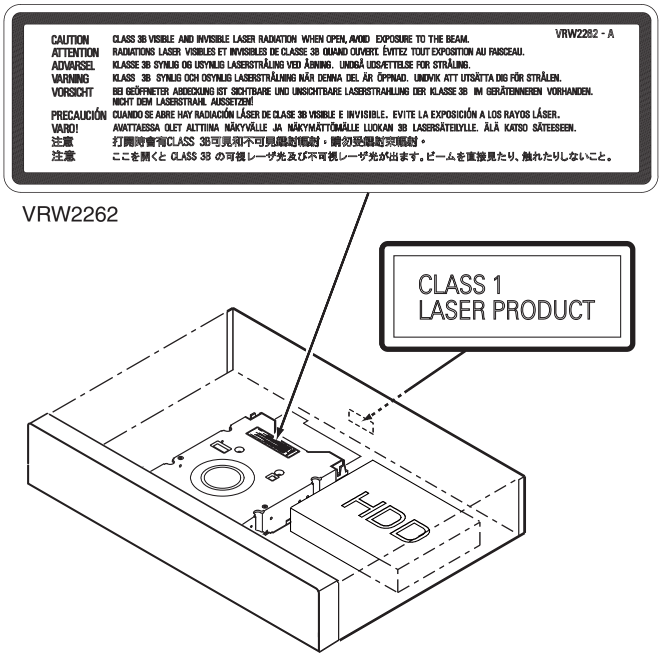
SAFETY INFORMATION

■ LABEL CHECK

WARNING!

The laser component is capable of emitting radiation exceeding the limit for CLASS 1. A specially instructed person should do servicing operation of the apparatus.



VRW2262 - A

CAUTION	CLASS 3B VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN, AVOID EXPOSURE TO THE BEAM.
ATTENTION	RADIATIONS LASER VISIBLES ET INVISIBLES DE CLASSE 3B QUAND OUVERT. ÉVITEZ TOUT EXPOSITION AU FAISCEAU.
ADVARSEL	KLASSE 3B SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING. UNDGÅ UDSÆTTELSE FOR STRÅLING.
VARNING	KLASS 3B SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD. UNDVIK ATT UTSÄTTA DIG FÖR STRÅLEN.
VORSICHT	BEI GEÖFFNETER ABDECKUNG IST SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG DER KLASSE 3B IM GERÄTEINNEREN VORHANDEN. NICHT DEM LASERSTRAHL AUSSETZEN!
PRECAUCIÓN	CUANDO SE ABRE HAY RADIACIÓN LÁSER DE CLASE 3B VISIBLE E INVISIBLE. EVITE LA EXPOSICIÓN A LOS RAYOS LÁSER.
VARO!	AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LUOKAN 3B LASERSÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN.
注意	打開時會有CLASS 3B可見和不可見鐳射輻射，請勿受鐳射束輻射。
注意	ここを開くと CLASS 3B の可視レーザ光及び不可視レーザ光が出ます。ビームを直接見たり、触れたりしないこと。

VRW2262

CLASS 1
LASER PRODUCT

Laser Pickup specifications and Laser characteristics

For CD
Wave length : 785 nm
Operating output :
Read mode : 1.07 mW (CW), Class1
Maximum output : Class1M

For DVD
Wave length : 660 nm
Operating output :
Read mode : 1.08 mW, Class1
Write mode : 21.89 mW (Pulse), Class1M
Maximum output : Class2M

Additional Laser Caution

1. The ON/OFF(ON:low level,OFF:high level) status of the CLAMP signals for detecting the loading state are detected by the drive CPUs, and the design prevents laser diode oscillation when the CLAMP signal turns OFF.
   In normal operation, if no disc is clamped, the laser diode oscillation is disabled.
   However, the interlock does not always operate in the "LD Degration Judgment of ATA/ATAPI DEBUG OSD" and "ADJUSTMENT"*.

2. When the cover is opened, close viewing of the objective lens with the naked eye will cause exposure to a Class 3A laser beam.

* Refer to Pages 46 and 73.

■ LITHIUM BATTERY NOTICE

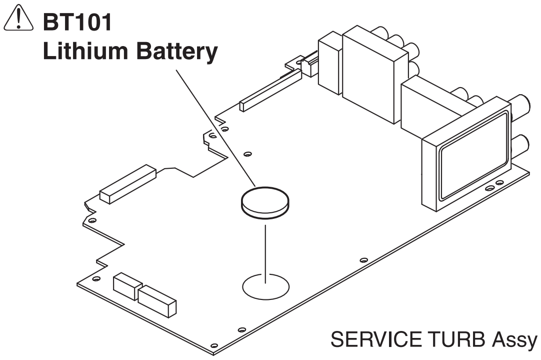
CAUTION

Danger of explosion if battery is incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Discard used batteries according to the manufacturer's instructions.

When replacing the lithium batteries, follow the note below. Dispose of the used battery promptly. Keep away from children. Do not disassemble and do not dispose of in fire.
The battery used in this device may present a fire or chemical hazard if mistreated. Do not recharge, disassemble, heat above 100°C or incinerate. Replace only with the same Part Number. Use of another battery may present a risk of fire or explosion.

Note : The lithium battery installation position is shown in the exploded views.

Exploded Views



SERVICE TURB Assy

[Important Check Points for Good Servicing]

In this manual, procedures that must be performed during repairs are marked with the below symbol.
Please be sure to confirm and follow these procedures.

1. Product safety

Please conform to product regulations (such as safety and radiation regulations), and maintain a safe servicing environment by following the safety instructions described in this manual.

① Use specified parts for repair.

Use genuine parts. Be sure to use important parts for safety.

② Do not perform modifications without proper instructions.

Please follow the specified safety methods when modification(addition/change of parts) is required due to interferences such as radio/TV interference and foreign noise.

③ Make sure the soldering of repaired locations is properly performed.

When you solder while repairing, please be sure that there are no cold solder and other debris.
Soldering should be finished with the proper quantity. (Refer to the example)

④ Make sure the screws are tightly fastened.

Please be sure that all screws are fastened, and that there are no loose screws.

⑤ Make sure each connectors are correctly inserted.

Please be sure that all connectors are inserted, and that there are no imperfect insertion.

⑥ Make sure the wiring cables are set to their original state.

Please replace the wiring and cables to the original state after repairs.
In addition, be sure that there are no pinched wires, etc.

⑦ Make sure screws and soldering scraps do not remain inside the product.

Please check that neither solder debris nor screws remain inside the product.

⑧ There should be no semi-broken wires, scratches, melting, etc. on the coating of the power cord.

Damaged power cords may lead to fire accidents, so please be sure that there are no damages.
If you find a damaged power cord, please exchange it with a suitable one.

⑨ There should be no spark traces or similar marks on the power plug.

When spark traces or similar marks are found on the power supply plug, please check the connection and advise on secure connections and suitable usage. Please exchange the power cord if necessary.

⑩ Safe environment should be secured during servicing.

When you perform repairs, please pay attention to static electricity, furniture, household articles, etc. in order to prevent injuries.
Please pay attention to your surroundings and repair safely.

2. Adjustments

To keep the original performance of the products, optimum adjustments and confirmation of characteristics within specification.
Adjustments should be performed in accordance with the procedures/instructions described in this manual.

3. Lubricants, Glues, and Replacement parts

Use grease and adhesives that are equal to the specified substance.
Make sure the proper amount is applied.

4. Cleaning

For parts that require cleaning, such as optical pickups, tape deck heads, lenses and mirrors used in projection monitors, proper cleaning should be performed to restore their performances.

5. Shipping mode and Shipping screws

To protect products from damages or failures during transit, the shipping mode should be set or the shipping screws should be installed before shipment. Please be sure to follow this method especially if it is specified in this manual.

CONTENTS

1. SERVICE PRECAUTIONS

- **When servicing this model, some service procedures may reset the customer settings to the factory default settings. Make sure to explain this to the customer.**

- **An HDD (Hard Disc Drive) is mounted in this product.**
  When an HDD becomes defective and inoperable, restoration of the user's data recorded on the HDD, or copying of the user's recorded data to other media (such as a new HDD) is totally impossible.
  Before servicing, OBTAIN THE USER'S PRIOR CONSENT to that effect.
  The user must be made aware that all recorded data are deleted if the HDD is intialized.

1.1 NOTES ON SOLDERING

- For environmental protection, lead-free solder is used on the printed circuit boards mounted in this unit.
  Be sure to use lead-free solder and a soldering iron that can meet specifications for use with lead-free solders for repairs accompanied by reworking of soldering.

- Compared with conventional eutectic solders, lead-free solders have higher melting points, by approximately 40 ºC.
  Therefore, for lead-free soldering, the tip temperature of a soldering iron must be set to around 373 ºC in general, although the temperature depends on the heat capacity of the PC board on which reworking is required and the weight of the tip of the soldering iron.

Do NOT use a soldering iron whose tip temperature cannot be controlled.

Compared with eutectic solders, lead-free solders have higher bond strengths but slower wetting times and higher melting temperatures (hard to melt/easy to harden).

The following lead-free solders are available as service parts:
- Parts numbers of lead-free solder:
  GYP1006 1.0 in dia.
  GYP1007 0.6 in dia.
  GYP1008 0.3 in dia.

1.2 NOTES ON HANDLING THE HDD

(1) Cautions on Handling the HDD

- The HDD is very sensitive to shocks and vibrations. Care must be taken especially during operation (when the power is on).
- The HDD is very sensitive to electrostatic charges.
- Rapid change in temperature or humidity may cause deterioration of the HDD.

Note: After receiving damage caused by any above-mentioned factors, the HDD may operate normally for dozens or some hundreds of hours but then suddenly crash. If you are certain you have damaged a new repair part (HDD) while making repairs, do not use the part.

The HDD is about 10 times as sensitive to shock during operation than during nonoperation.

Reference: Main specifications on damage to the HDD

	During operation	During noperation
Shock G (acceleration)	<approx. 20 G	<approx. 200 G
Temperature change	< 20ºC/hour	
Moisture change	< 20%/hour	

Reference: Estimate value of falling distance vs. shock (G) when the HDD is dropped without protection

Falling distance \ Landing surface	Granite surface	Concrete floor	Synthetic-resin-coated table	Antistatic sponge
0.5 inch / 12.7 mm	387	217	200	26
1.0 inch / 25.4 mm	595	457	310	37
2.0 inch / 50.8 mm	1133	600	680	70
4.0 inch / 101.6 mm	1795	1040	1050	267

(2) Cautions on handling the product on which the HDD is mounted or the HDD as a repair part, and examples of dangerous handling

[Cautions on handling the product on which the HDD is mounted]

- While the unit is turned on, the HDD is always in operation. Be sure NOT to impart shock to the unit.

● Examples of dangerous handling: while the power is on

- Bumping on the bonnet
- Dropping an object, such as a small screwdriver or remote control unit, onto the bonnet, or bumping an object against the cabinet
- Moving the unit by dragging
- Stacking another product on the unit

Note: Be sure NOT to impart shock, such as bumping or hitting a screwdriver against the HDD, during diagnosis with the bonnet open.

● Examples of dangerous handling: while the power is off

- Imparting strong shock, although the HDD is more resistant to shock when the power is off
- Dropping the unit from a height of several centimeters, or after lifting one side of the unit up, then letting the unit drop.

- Do NOT move the unit immediately after the power is turned off. Wait at least 30 seconds after the indication on the FL display changed from POWER OFF to the clock indication before moving the unit. If the AC power cord is accidentally disconnected before turning the unit off, wait at least for one minute before moving it. In this case, damage to the HDD caused by sudden shutoff may be small, because the emergency relief mechanism is activated. However, if sudden shutoff occurrs during recording or playback, recorded data may be damaged. Be sure to check operations.

[Cautions on handling the HDD as a repair part]

1. Handle the HDD in a safe environment:
   - Handle the HDD over an antistatic pad that can also absorb shock.
   - Wear wrist bands to prevent electrostatic charges generated in your body from affecting the HDD.

2. The following must be observed when handling the HDD:
   - Handle one HDD at a time. Do NOT hold several HDDs at the same time.
   - Grip the HDD on both sides so that you do not touch its terminals or circuit boards.
   - Do NOT stack one HDD onto another HDD (even if the HDDs are protected in antistatic bags).
   - Do NOT bump the HDDs against one another.
   - Do NOT bump any tool, such as a screwdriver, or other hard object against the HDD.
   - When a repair part (HDD) is transported and there is a large temperature difference between outdoors and indoors, to the indoor, leave it in its package for about a half day to gradually cool or warm the HDD to room temperature before unpacking it.

[Notes on packing for shipment]

- When returning a defective HDD for analysis, handle with care as if it were a good product. Otherwise, the results of analysis may not be correct.
- When packing, use the antistatic bag and packing materials in which the repair part for service was delivered. Attach a copy of the slip for service or a memo stating symptoms in as much detail as possible.

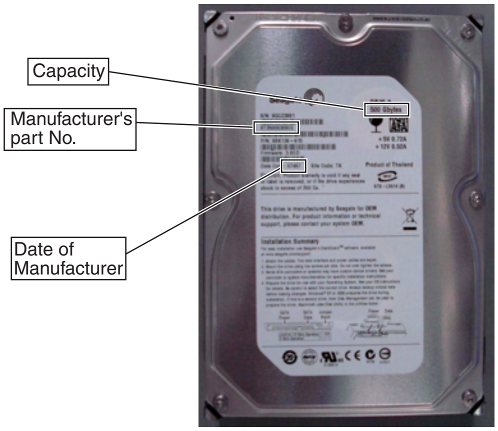
Outline and part No. of the HDDs

*Pioneer's part No. is not stamped.

Model Name	Capacity	SEAGATE	
		Pioneer's Part No. (for service)	Manufacture's Part No.
DVR-LX70	500GB	VXF1155	ST3500830SS

- When replacing the HDD, carefully check the capacity and manufacturer's part No. on the part label to avoid replacing with a similar but inappropriate product. You can also check the model No. of the mounted HDD on the Service mode screen.
- Do NOT use repair parts, such as commercially available HDDs, other than those designated above, as their functions, performance or reliability cannot be guaranteed.

Seagate(500GB)



1.3 NOTES ON REPLACEMENT OF THE SDRAM

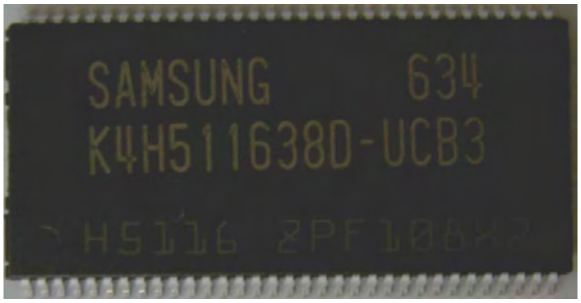
Note when replacing the SDRAM

When replacement of the SDRAM (IC1201 or IC1221) on the MAIN Assy is required, identify the manufacturer of the SDRAM.
If the SDRAM that needs replacement was manufactured by SAMSUNG, both IC1201 and IC1221 must be replaced at the same time.
SDRAMs for service are manufactured by SAMSUNG.

• How to identify the manufacturer

Confirm the name of the manufacturer stamped on the surface of the part.

By SAMSUNG (replacement of only the defective SDRAM possible)



• Measures to be taken

① If the SDRAM that needs replacement was manufactured by SAMSUNG:
Replace both IC1201 and IC1221 at the same time.
② If the SDRAM that needs replacement was manufactured by SAMSUNG:
Replacement of only the defective SDRAM (IC1201 or IC1221) is possible.

• Possible malfunctions

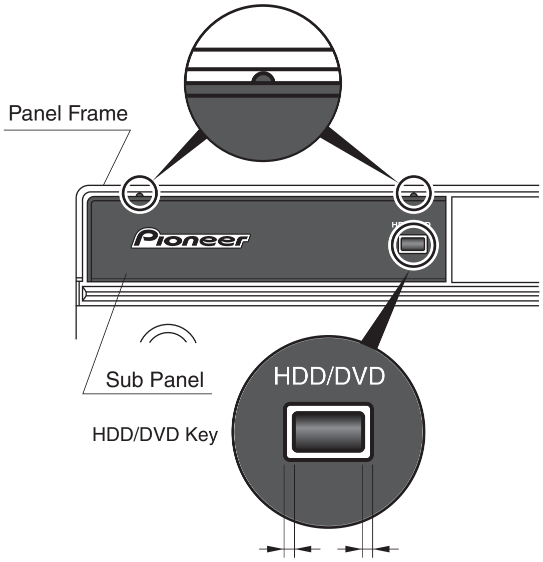
If SDRAMs made by different manufacturers are mounted on the MAIN Assy, the following malfunctions may occur:
① The power does not come on.
② High-speed dubbing disabled
③ Other malfunctions related to the SDRAM

1.4 NOTES ON REPLACEMENT OF THE FL LENS AND SUB PANEL

The Panel Frame, FL Lens, FL Filter, and Sub Panel are attached to the chassis with two-sided (double-back) tape.
If one of these parts has to be replaced, replace all three parts at the same time.
To replace the FL Lens and Sub Panel follow the procedures described below:

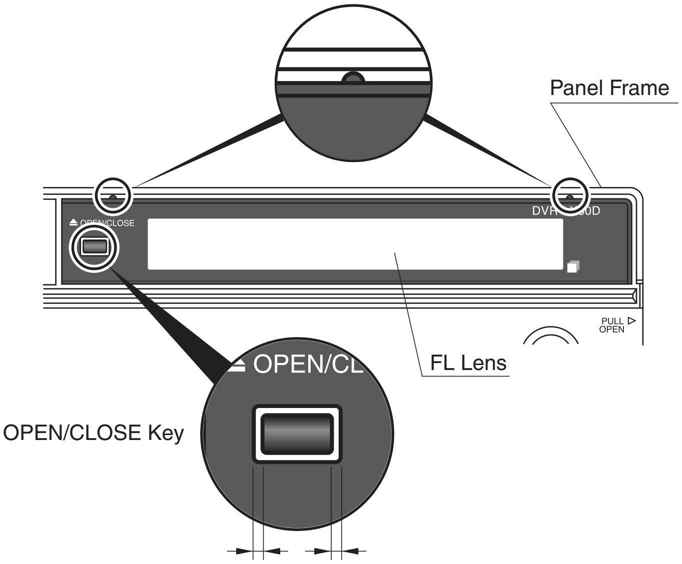
Procedures for replacement of the Sub Panel

1. Lightly attach the Sub Panel so that the two projections on the upper side of the panel touch the Panel Frame and that the clearances between the HDD/DVD key and the cutout for that key on the Sub Panel will be the same on the left and right sides.
2. After confirming that the Sub Panel is properly aligned, strongly push the black part of the Sub Panel to firmly attach it. Be careful not to press the HDD/DVD key while attaching the Sub Panel.



Procedures for replacement of the FL Lens

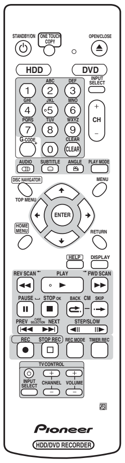
1. Lightly attach the FL Lens so that the two projections on the upper side of the panel touch the Panel Frame and that the clearances between the OPEN/CLOSE key and the cutout for that key on the FL Lens will be the same on the left and right sides.
2. After confirming that the FL Lens is properly aligned, strongly push the black part of the FL Lens to firmly attach it. Be careful not to press the OPEN/CLOSE key while attaching the FL Lens.



2. SPECIFICATIONS

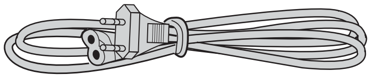
2.1 ACCESSORIES

- Remote control ×1
  (VXX3267)

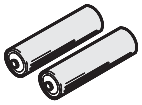


- Operating Instructions (English)
  (VRB1477)
- Operating Instructions (Trad-Chinese)
  (VRC1433)

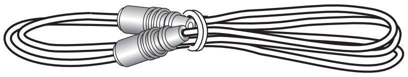
- Power cable ×1
  (ADG1127:TLXV)



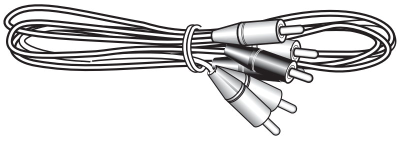
- Power cable ×1
  (ADG7097:TFXV)
- Dry cell batteries ×2
  (AA/R6P)



- RF antenna cable ×1
  (VDE1075:TLXV)
  (VDE1088:TFXV)



- Audio / Video cable(1.5m) ×1
  (red/white/yellow)
  (VDE1077)



2.2 SPECIFICATIONS

General

Power requirements	110 V to 240 V, 50 Hz/60 Hz
Power consumption	50 W
Power consumption in standby mode (Front panel display: off)	0.38 W
Weight	6.6 kg
Dimensions	420 mm (W) x 77 mm (H) x 355 mm (D)
Operating temperature	+5 °C to +35 °C
Operating humidity	5 % to 85 % (no condensation)
TV system	
Taiwan and Philippines model	NTSC
Other	PAL/SECAM/NTSC

Readable discs

DVD-Video, DVD-RW, DVD-R, DVD+R, DVD+RW, DVD-RAM, Video CD, Super VCD, CD, CD-R/-RW (WMA, MP3, JPEG, CD-DA, DivX)

Recording discs and formats

DVD-R/-RW: VR mode and Video mode
DVD+R/+RW: +VR mode
DVD-RAM: VR mode
DVD-RDL: VR mode and Video mode
DVD+RDL: +VR mode

Video recording format

Sampling frequency	13.5 MHz
Compression format	MPEG

Audio recording format

Sampling frequency	48 kHz
Compression format	Dolby Digital or Linear PCM (uncompressed)

Recording time

HDD (500 GB)

XP+	Approx. 72 h
Fine (XP)	Approx. 106 h
Standard Play (SP)	Approx. 212 h
Long Play (LP)	Approx. 424 h
Extended Play (EP)	Approx. 638 h
Super Long Play (SLP)	Approx. 850 h
Super Extended Play (SEP)	Approx. 1064 h
Manual Mode (MN)	Approx. 72 h to 1422 h

DVD-R/-RW, DVD+R/+RW, DVD-RAM

Fine (XP)	Approx. 1 h
Standard Play (SP)	Approx. 2 h
Long Play (LP)	Approx. 4 h
Extended Play (EP)	Approx. 6 h
Super Long Play (SLP)	Approx. 8 h
Super Extended Play (SEP)	Approx. 10 h (DVD-R/-RW, DVD-RAM only)
Manual Mode (MN)	
DVD-R/-RW/-RAM	Approx. 1 h to 13 h
DVD+R/+RW	Approx. 1 h to 8 h

DVD-RDL/DVD+RDL

Fine (XP)	Approx. 1 h 51 m
Standard Play (SP)	Approx. 3 h 35 m
Long Play (LP)	Approx. 7 h 11 m
Extended Play (EP)	Approx. 10 h 46 m
Super Long Play (SLP)	Approx. 14 h 21 m
Super Extended Play (SEP)	Approx. 17 h 57 m (DVD-RDL only)
Manual Mode (MN)	
DVD-RDL	Approx. 1 h 51 m to 24 h
DVD+RDL	Approx. 1 h 51 m to 14 h 21 m

Timer

Programmes	1 month/32 programmes
Clock	
Taiwan and Philippines model	Quartz lock (12-hour digital display[1])
Other	Quartz lock (24-hour digital display)

Note:

[1] If the country is set to Philippines the clock switches to 24 hour display.

Tuner

Receivable channels

Taiwan and Philippines model:

	NTSC-M/N Frequency	NTSC-M/N Channel
VHF	55 MHz to 218 MHz	2 to 13
UHF	471 MHz to 808 MHz	14 to 69
CATV	72 MHz to 806 MHz	C1 to C125

STEREO
M/N - BTSC

Other:

	SECAM B/G PAL B/G		PAL I	
	Frequency	**Channel**	**Frequency**	**Channel**
VHF (low)	47 MHz to 89 MHz	E2 to E4 X to Z	44 MHz to 89 MHz	A to C X to Z
VHF (high)	104 MHz to 300 MHz	E5 to E12 S1 to S20 M1 to M10 U1 to U10	104 MHz to 300 MHz	D to J 11, 13 S1 to S20
Hyper	302 MHz to 470 MHz	S21 to S41	302 MHz to 470 MHz	S21 to S41
UHF	470 MHz to 862 MHz	E21 to E69	470 MHz to 862 MHz	E21 to E69

	SECAM D/K PAL D/K Frequency	SECAM D/K PAL D/K Channel
VHF (low)	49 MHz to 94 MHz	R1 to R5
VHF (high)	104 MHz to 300 MHz	R6 to R12 S1 to S20
Hyper	302 MHz to 470 MHz	S21 to S41
UHF	470 MHz to 862 MHz	E21 to E69

	NTSC-M/N Frequency	NTSC-M/N Channel
VHF	55 MHz to 218 MHz	2 to 13
UHF	471 MHz to 808 MHz	14 to 69
CATV	72 MHz to 806 MHz	C1 to C125

STEREO
B/G - A2
I - NICAM
B/G - NICAM
D/K - NICAM
M/N - BTSC

Input/Output

VHF/UHF antenna input/output terminal	
Taiwan and Philippines model	VHF/UHF set 75 Ω (F-shape connector)
Other	VHF/UHF set 75 Ω(IEC connector)
Video Input 1 (rear), 2 (front), 3 (rear)	
Input level	1 Vp-p (75 Ω)
Jacks	RCA jacks
Video Output 1, 2	
Output level	1 Vp-p (75 Ω)
Jacks	RCA jacks
S-Video Input 1 (rear), 2 (front), 3 (rear)	
Y (luminance) - Input level	1 Vp-p (75 Ω)
C (colour) - Input level	
Taiwan and Philippines model	286 mVp-p (75 Ω)
Other	300 mVp-p (75 Ω)
Jacks	4-pin mini DIN
S-Video Output 1, 2	
Y (luminance) - Output level	1 Vp-p (75 Ω)
C (colour) - Output level	
Taiwan and Philippines model	286 mVp-p (75 Ω)
Other	300 mVp-p (75 Ω)
Jacks	4-pin mini DIN
Component video output	
Output level	Y: 1.0 Vp-p (75 Ω) P_B,P_R: 0.7 Vp-p (75 Ω)
Jacks	RCA jacks
Audio Input 1 (rear), 2 (front), 3 (rear) L/R	
During audio input	2 V rms (Input impedance: more than 22 kΩ)
Jacks	RCA jacks
Audio Output 1, 2 L/R	
During audio output	2 V rms (Output impedance: less than 1.5 kΩ)
Jacks	RCA jacks
Other connections	
Control input	Mini jack
Digital audio output	Coaxial
DV input	4-pin (front) (i.LINK/IEEE 1394 standard)
USB	Type A (front), Type B (front)
HDMI	19-pin

Supplied accessories

Remote control	1
Dry cell batteries (AA/R6P)	2
Audio/Video cable (red/white/yellow)	1
RF antenna cable	1
Power cable	1
Operating Instructions	

Note: The specifications and design of this product are subject to change without notice, due to improvement.

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2.3 DISC/CONTENT FORMAT

HDD/DVD Recording and playback compatibility

This recorder can play and record all widely-used DVD disc types, and additionally provides HDD functionality. The table below shows some specific compatibility differences between the different disc types.

	HDD	DVD-R		DVD-RW		DVD+R	DVD +RW	DVD -RAM
Marks used in this manual	HDD	DVD (VR) *1	DVD (Video)	DVD (VR) *1	DVD (Video) *2	DVD+R	DVD+RW	DVD-RAM *13,16
Logos	HDD HARD DISK DRIVE	DVD R		DVD RW	DVD RW RW 2	RW DVD+R	RW DVD+ReWritable RW DVD+ReWritable High Speed	DVD RAM
Re-recordable/ Erasable	●	*3	*3	●	●	*3	●*14	●
Editing of recorded programmes	●	●	●*4	●	●*4	●*4	●*4	●
Recording of Copy-once protected material	●	●*12		●*12				●*12
Playback in other players/recorders	n/a	*5	●*6	*7	●*6	● *6, 15	●*8	●*9
Chase play	●							
16:9 and 4:3 programme recording	●	●		●				●
Dual mono/ Bilingual broadcast recording of both audio channels	● *10, 11	●*11		●*11				●*11

Notes to table

*1 Must be initialized for VR mode recording.
*2 Must be initialized for Video mode recording.
*3 Erasable, but free space does not increase.
*4 Cannot erase sections, edit chapters or use playlist editing.
*5 Must be compatible with DVD-R (VR) playback.
*6 Finalize using this recorder (may not playback in some units).
*7 Must be compatible with DVD-RW (VR) playback.
*8 Must be compatible with DVD+RW playback.
*9 Must be compatible with DVD-RAM playback.
*10 Only when HDD Recording Format is set to Video Mode Off.
*11 Only when the recording mode is not set to LPCM.
*12 CPRM-compatible discs only.
*13 Take the disc out of the cartridge before use. Only Panasonic and Maxell discs have been tested to work reliably with this recorder. Discs from other makers may become unusable when recorded or edited.
*14 Erasing a title does not increase the available recording time, nor increase the number of recordable titles left.
*15 Must be compatible with DVD+R playback.
*16 Depending on the disc, it may have to be initialized before it can be recorded. In this case, initialization will take about an hour.

DVD is a trademark of DVD Format/Logo Licensing Corporation.

Using DVD-R DL/DVD+R DL discs

DVD-R DL (Dual-Layer) and DVD+R DL (Double-Layer) discs contain two recordable layers on a single side, giving about 1.8 times the recording capacity of a conventional single-layer disc. This unit can record to both DVD-R DL and DVD+R DL discs.

- If you intend to play DVD-R DL (Video mode) or DVD+R DL discs recorded on this unit on other DVD recorders/players, you must finalize them. (Note that some DVD recorders/players may not play even finalized DL discs.)
- This logo indicates that the disc is a DVD-R DL or DVD+R DL disc:

R DL 4X/2X DVD+R DL

Correct operation has been confirmed for DL discs:

- DVD-R DL ver. 3.0/2x to 4x
  Mitsubishi Kagaku Media (Verbatim)
- DVD-R DL ver. 3.0/2x to 8x
  Mitsubishi Kagaku Media (Verbatim)
  That's
  JVC
- DVD+R DL 2.4x
  Mitsubishi Kagaku Media (Verbatim)
  RICOH
- DVD+R DL 2.4x to 8x
  Mitsubishi Kagaku Media (Verbatim)
  RICOH

About DualDisc playback

A DualDisc is a new two -sided disc, one side of which contains DVD content – video, audio, etc. – while the other side contains non-DVD content such as digital audio material.

The non-DVD, audio side of the disc is not compliant with the CD audio specification and therefore may not play.

It is possible that when loading or ejecting a DualDisc, the opposite side to that being played will be scratched. Scratched discs may not be playable.

The DVD side of a DualDisc plays in this product. DVD-Audio content will not play.

For more detailed information on the DualDisc specification, please refer to the disc manufacturer or disc retailer.

Other disc compatibility

In addition to DVD, this recorder is compatible with a wide range of disc types (media) and formats. Playable discs will generally feature one of the logos on the disc and/or disc packaging shown below. Note however that some disc types, such as recordable CD (and DVD), may be in an unplayable format — see below for further compatibility information.

Audio CD **CD-R** **CD-RW**

Video CD **Super Video CD (Super VCD)**

CD-R/-RW compatibility

This recorder cannot record CD-R or CD-RW discs.

- Readable formats: CD audio, Video CD/ Super VCD, ISO 9660 CD-ROM* containing MP3, WMA, JPEG or DivX files
  * ISO 9660 Level 1 or 2 compliant. CD physical format: Mode1, Mode2 XA Form1. Romeo and Joliet file systems are both compatible with this recorder.
- Multi-session playback: Yes (except CD audio and Video CD/Super VCD)
- Unfinalized disc playback: CD audio only

Compressed audio compatibility

- Compatible media: DVD-ROM, DVD-R/-RW, DVD+R/+RW, DVD-RAM, CD-ROM, CD-R, CD-RW, USB
- Compatible formats: MPEG-1 Audio Layer 3 (MP3), Windows Media Audio (WMA)

- Sampling rates: 32 kHz, 44.1 kHz or 48 kHz
- Bit-rates: Any (128 kbps or higher recommended)
- Variable bit-rate (VBR) MP3 playback: Yes
- VBR WMA playback: No
- WMA encoder compatibility: Windows Media Codec 8 (files encoded using Windows Media Codec 9 may be playable but some parts of the specification are not supported; specifically, Pro, Lossless, Voice and VBR)
- DRM (Digital Rights Management)[1] file playback: No
- File extensions: .mp3, .wma (these must be used for the recorder to recognize MP3 and WMA files – do not use for other file types)
- File structure: The recorder can load up to 99 folders/999 files at one time (if there are more files/folders that this on the disc then more can be reloaded)

WMA (Windows Media™ Audio) content

This recorder can playback Windows Media Audio content.

WMA is an acronym for Windows Media Audio and refers to an audio compression technology developed by Microsoft Corporation.

Windows Media is a trademark of Microsoft Corporation.

This product includes technology owned by Microsoft Corporation and cannot be used or distributed without a license from Microsoft Licensing, Inc.

DivX video compatibility

DivX is a compressed digital video format created by the DivX® video codec from DivX, Inc. Keeping the same terminology as DVD-Video, individual DivX video files are called “Titles”. When naming files/titles on a disc prior to burning, keep in mind that by default they will be played in alphabetical order.

- Official DivX® Certified product.
- Plays all versions of DivX® video (including DivX® 6) with standard playback of DivX® media files.
- File extensions: .avi and .divx (these must be used for the recorder to recognize DivX video files). Note that all files with the .avi extension are recognized as MPEG4, but not all of these are necessarily DivX video files and therefore may not be playable on this recorder.
- File structure: Up to 99 folders or 999 files.

DivX, DivX Certified, and associated logos are trademarks of DivX, Inc. and are used under license.

DivX® VOD content

In order to play DivX VOD (video on demand) content on this recorder, you first need to register the recorder with your DivX VOD content provider. You do this by generating a DivX VOD registration code, which you submit to your provider.

Note

[1] DRM (digital rights management) copy protection is atechnology designed to prevent unauthorized copying by restricting playback, etc. of compressed audio files on devices other than the PC (or other recording equipment) used to record it. For detailed information, please see the instruction manuals or help files that came with your PC and/or software.

Some DivX VOD content may only be playable a fixed number of times. When you load a disc containing this type of DivX VOD content, the remaining number of plays is shown on-screen and you then have the option of playing the disc (thereby using up one of the remaining plays), or stopping. If you load a disc that contains expired DivX VOD content (for example, content that has zero remaining plays), the message **Rental Expired** is displayed.

If your DivX VOD content allows an unlimited number of plays, then you may load the disc into your recorder and play the content as often as you like, and no message will be displayed.

Important

- DivX VOD content is protected by a DRM system. This restricts playback of content to specific, registered devices.
- If you load a disc that contains DivX VOD content not authorized for this recorder, the message **Authorization Error** is displayed and the content will not play.
- Resetting the recorder will not cause you to lose your registration code.

JPEG file compatibility

- Compatible formats: Baseline JPEG and EXIF 2.2* still image files
  *File format used by digital still cameras
- Sampling ratio: 4:4:4, 4:2:2, 4:2:0
- Horizontal resolution: 160 to 5120 pixels
- Vertical resolution: 120 to 3840 pixels
- Progressive JPEG compatible: No
- File extensions: .jpg, .jpeg, .jpe, .jif, .jfif (must be used for the recorder to recognize JPEG files – do not use for other file types)
- File structure: The recorder can load up to 99 folders/999 files at one time (if there are more files/folders that this on the disc then more can be reloaded)

PC-created disc compatibility

Discs recorded using a personal computer may not be playable in this unit due to the setting of the application software used to create the disc. In these particular instances, check with the software publisher for more detailed information.

Discs recorded in packet write mode (UDF format) are not compatible with this recorder.

Check the DVD-R/-RW or CD-R/-RW software disc boxes for additional compatibility information.

Dolby Digital

Manufactured under license from Dolby Laboratories. “Dolby” and the double-D symbol are trademarks of Dolby Laboratories.

DTS

“DTS” and “DTS Digital Out” are registered trademarks of DTS, Inc.

About the internal hard disk drive

The internal hard disk drive (HDD) is a fragile piece of equipment. When used without the proper care or in the wrong conditions, it is possible that recorded contents may be damaged or lost entirely, in some cases making even normal playback or recording impossible. Please understand that in the event of repair or replacement of the HDD or related components, all your HDD recordings will be lost.

Please use the recorder following the guidelines below to protect against possible HDD failure.

The HDD should not be regarded as a place to store recordings permanently. We recommend that you back up your important recordings onto DVD discs in order to protect against accidental loss.

Pioneer cannot under any circumstances accept responsibility for any direct or indirect loss arising from any inconvenience or loss of recorded material resulting from HDD failure.

- Install and use the recorder on a stable, level surface.
- Do not block the rear vent/cooling fan.
- Do not use the recorder in excessively hot or humid places, or in places that may be subject to sudden changes in temperature. Sudden changes in temperature can cause condensation to form inside the recorder. This can be a cause of HDD failure.
- Do not move the recorder immediately after switching it off. If you need to move the recorder, please follow the steps below:

  1 After the message **POWER OFF** is shown on the front panel display, wait at least two minutes.

  2 Unplug from the wall socket.

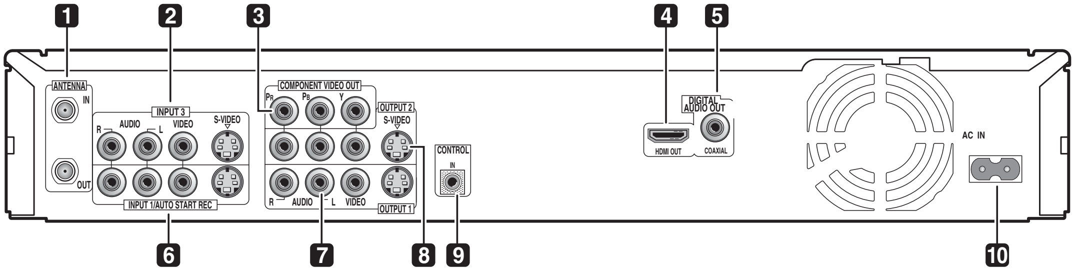
  3 Move the recorder.
- If there’s a power failure while the recorder is on there is a chance that some data on the HDD will be lost.
- The HDD is very delicate. If used over time in an improper manner or in an unsuitable environment, it is possible that the HDD will fail. Signs of problems include playback unexpectedly freezing and noticeable block noise (mosaic) in the picture. However, sometimes there will be no warning signs of HDD failure. If the HDD fails, no playback of recorded material will be possible. In this case it will be necessary to replace the HDD unit.

Optimizing HDD performance

As you record and edit material on the HDD, the data on the disk becomes fragmented, eventually affecting the recorder’s performance. Before this happens, the recorder will warn you that it is time to optimize the HDD.

2.4 PANEL FACILITIES

◆ Rear Panel



1 ANTENNA IN (RF IN)/OUT
Connect your TV antenna to the **ANTENNA IN (RF IN)** jack. The signal is passed through to the **ANTENNA OUT** jack for connection to your TV.

2 INPUT 3
Stereo analog audio, video and S-Video inputs for connection to a satellite receiver, set top box, etc.

3 COMPONENT VIDEO OUT
A high-quality video output for connecting to a TV or monitor with a component video input.

4 HDMI OUT
HDMI output for high quality digital audio and video.

5 DIGITAL AUDIO OUT (COAXIAL)
Coaxial digital audio jack for connecting to an AV amplifier/receiver, Dolby Digital/DTS decoder or other equipment with a digital input.

6 INPUT 1/AUTO START REC
Stereo analog audio, video and S-Video inputs for connection to a satellite receiver, set top box, etc.

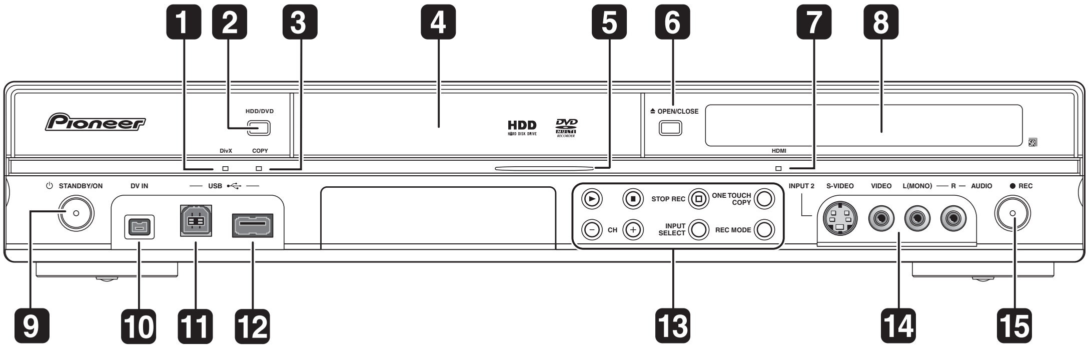
7 OUTPUT 1
Stereo analog audio, video and S-Video outputs for connection to a TV or AV amplifier/receiver.

8 OUTPUT 2
Stereo analog audio, video and S-Video outputs for connection to a TV or AV amplifier/receiver.

9 CONTROL IN
Use to control this recorder from the remote sensor of another Pioneer component with a **CONTROL OUT** terminal and bearing the Pioneer SR mark. Connect the **CONTROL OUT** of the other component to the **CONTROL IN** of this recorder using a mini-plug cord.

10 AC IN – Power inlet
Connect to a power outlet using the supplied power cable after making all other connections.

◆ Front panel



1 DivX indicator
Lights when this recorder plays DivX video files.

2 HDD/DVD
Press to switch between HDD and DVD for recording and playback.

3 COPY indicator
Lights when copying is underway.

4 Disc tray

5 HDD/DVD indicator
Indicator lights blue when the hard disk (HDD) is selected; orange when the DVD drive is selected.

6 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

7 HDMI indicator
Lights when this recorder is connected to HDMI (HDCP) compatible component.

8 Front panel display and IR remote sensor

9 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

10 DV IN
A DV input i.LINK connector, suitable for connecting a DV camcorder.

11 USB port (Type B)
USB port for connecting a PictBridge-compatible printer or PC.

12 USB port (Type A)
USB port for connecting a digital camera, keyboard or other USB device.

13 ►
Press to start or restart playback.

■

Press to stop playback.

□ STOP REC
Press to stop recording.

ONE TOUCH COPY

Press to start One Touch Copy of the currently playing title to DVD or the HDD.

CH +/–

Use to change channels, skip chapters/tracks, etc.

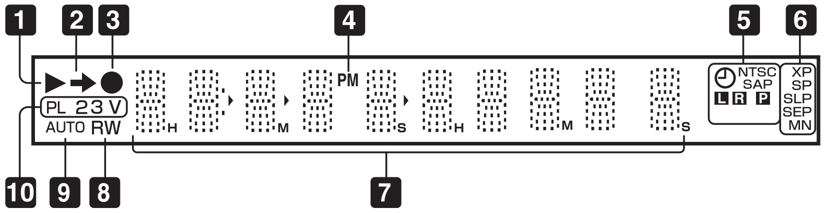
INPUT SELECT
Press to change the input used for recording.

REC MODE
Press repeatedly to cycle through recording modes (picture quality).

14 INPUT 2
Audio/video input (stereo analog audio; composite and S-Video), especially suitable for camcorders, game consoles, portable audio, etc.

15 ● REC
Press to start recording. Press repeatedly to set the recording time in 30 minute blocks.

◆ Display



1 ►
Lights during playback; blinks when playback is paused.

2 ➡
Lights when copying.

3 ●
Lights during recording; blinks when recording is paused.

4 PM
Lights to indicate PM (after midday) for the clock display.

5 ◷
Lights when a timer recording has been set. (Indicator blinks if the timer has been set to DVD but there isn't a recordable disc loaded, or the timer has been set to HDD but the HDD is not recordable.)

NTSC
Lights when the video output signal format is NTSC.

L R

Taiwan and Philippines model:
Indicates which channels are recorded when dual mono is selected.

Other:
Indicates which channels of a bilingual broadcast are recorded.

P
Lights when the component video output is set to progressive scan (except in some cases when a component is connected using HDMI).

SAP (Taiwan and Philippines model only)
Lights when the currently selected TV channel has a Secondary Audio Programme channel.

6 Recording quality indicators

XP
Lights when the recording mode is set to **XP** (best quality).

SP
Lights when the recording mode is set to **SP** (standard play).

LP/SLP
Lights when the recording mode is set to **LP** (long play) or **SLP** (super-long play).

EP/SEP
Lights when the recording mode is set to **EP** (extended play) or **SEP** (super-extended play).

MN
Lights when the recording mode is set to **MN** (manual recording level) mode.

7 Character display

8 R/RW
Indicates the type of recordable DVD loaded: DVD-R or DVD-RW.

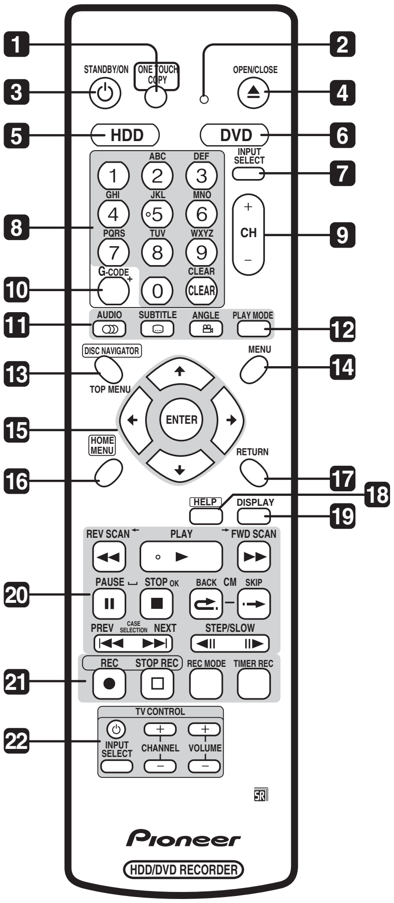
9 AUTO
Lights when Auto Start Recording has been set, and during Auto Start Recording.

10 PL
Lights when a VR mode disc is loaded and the recorder is in Play List mode.

2 3
Shows the remote control mode (if nothing is displayed, the remote control mode is 1).

V
Lights when an unfinalized Video mode disc is loaded.

◆ Remote Control



1 ONE TOUCH COPY
Press to start One Touch Copy of the currently playing title to DVD or the HDD.

2 Remote control indicator
Lights when setting up the remote control for use with a TV and when setting the remote control mode.

3 ⏻ STANDBY/ON
Press to switch the recorder on/into standby.

4 ⏏ OPEN/CLOSE
Press to open/close the disc tray.

5 HDD
Press to select the hard disk (HDD) for recording or playback.

6 DVD
Press to select the DVD for recording or playback.

7 INPUT SELECT
Press to change the input to use for recording.

8 Alphanumeric buttons, + and CLEAR
Use the number buttons for track/chapter/title selection; channel selection, and so on. The same buttons can also be used to enter names for titles, discs and so on.

Use the + button to enter non-alphanumeric characters and symbols.

Use **CLEAR** to clear an entry and start again.

9 CH +/–
Press to change the channel of the built-in TV tuner.

10 G-Code™
Press then use the number buttons to enter a G-Code programming number for timer recording.

G-Code is a trademark of Gemstar Development Corporation.

The G-Code system is manufactured under license from Gemstar Development Corporation.

11 DVD playback functions

AUDIO
Changes the audio language or channel. (When the recorder is stopped, press to change the tuner audio.)

SUBTITLE
Press to display/change the subtitles included in multilingual DVD-Video discs.

ANGLE
Press to switch camera angles on discs with multi-angle scenes.

12 PLAY MODE
Press to display the Play Mode menu (for features such as search, repeat and programme play).

13 DISC NAVIGATOR/ TOP MENU
Press to display the Disc Navigator screen, or the top menu if a DVD-Video or finalized DVD-R/-RW (Video) disc is loaded.

14 MENU
Press to display the disc menu if a DVD-Video disc is loaded.

15 ⬆/⬇/⬅/➡ and ENTER
Used to navigate all on-screen displays. Press **ENTER** to select the currently highlighted option.

16 HOME MENU
Press to display the Home Menu, from which you can navigate all the functions of the recorder.

17 RETURN
Press to go back one level in the on-screen menu or display.

18 HELP
Press for help on how to use the current GUI screen.

19 DISPLAY
Displays/changes the on-screen information displays.

20 Playback controls

◄◄ REV SCAN ►► FWD SCAN

Press to start reverse or forward scanning. Press again to change the speed.

► PLAY
Press to start playback.

II PAUSE
Press to pause playback or recording.

■ STOP
Press to stop playback.

⮌ CM BACK (commercial back)
Press repeatedly to skip progressively backward through the video playing.

→ CM SKIP (commercial skip)
Press repeatedly to skip progressively forward through the video playing.

I◄◄ PREV ►►I NEXT
Press to skip to the previous or next title/chapter/track; or to display the previous or next menu page.

◄II II► STEP/SLOW
During playback, press to start slow-motion playback; while paused, press to show the previous or next video frame.

21 Recording controls

● REC
Press to start recording. Press repeatedly to set the recording time in blocks of 30 mins.

☐ STOP REC
Press to stop recording.

REC MODE
Press repeatedly to change the recording mode (picture quality).

TIMER REC
Press to start setting a timer recording.

22 TV CONTROL
After setting up, use these controls to control your TV.

3. BASIC ITEMS FOR SERVICE

3.1 CHECK POINTS AFTER SERVICING

To keep the product quality after servicing, confirm recommended check points shown below.

No.	Procedures	Item to be checked
1	Confirm the firmware version on the first screen on Service Mode. Also check the compatibility of each firmware (OK or NG).	The version of each firmware must be the latest. All of firmware compatibility must be "OK". Update firmware to the latest one, if it is not the latest or the compatibility is "NG".
2	Confirm whether the customer complain has been solved. If the customer complain occurs with the specific disc, use it for the operation check.	The customer complain must not be reappeared. Video, audio and operations must be normal.
3	Perform the HDD physical test (Self-Test on HDD check mode).	"NG" must not be appeared.
4	Confirm playback error rates at the innermost and outermost tracks by using the following disc. DVD test disc (GGV1025)	The error rates must be less than 8.0e-4.
5	Record from the tuner (or an external source) to the HDD for 1 minute. After that, play back the content.	Video, audio and operations must be normal.
6	Copy the recorded content on the HDD in the previous step to a DVD-RW disc. After that, play back the disc.	Video, audio and operations must be normal.
7	Confirm the user setting, and whether the test-recorded content have been deleted.	Be sure to delete the test-recorded content on the HDD.
8	Check the appearance of the product.	No scratches or dirt on its appearance after receiving it for service.

See the table below for the items to be checked regarding video and audio:

Items to be checked regarding video	Item to be checked regarding audio
Block noise	Distortion
Horizontal noise	Noise
Dot noise	Volume too low
Disturbed image (video jumpiness)	Volume too high
Too dark	Volume fluctuating
Too bright	Sound interrupted
Mottled color	

◆ Necessary Procedure List When Replacing Assys

Following is the surely necessary procedures and the product state after changing, when replacing next ASSYs.

Replaced ASSY	Necessary setting	State after replacing	
		User setting	HDD contents
MAIN ASSY	1. Model setting 2. LD power adjustment 3. CPRM setting 4. Firmware update	×	○
TUSB ASSY	1. Model setting 2. CPRM setting 3. Firmware update	×	○
LOADER ASSY	1. LD power adjustment	○	○
HDD	1. CPRM setting	○	×

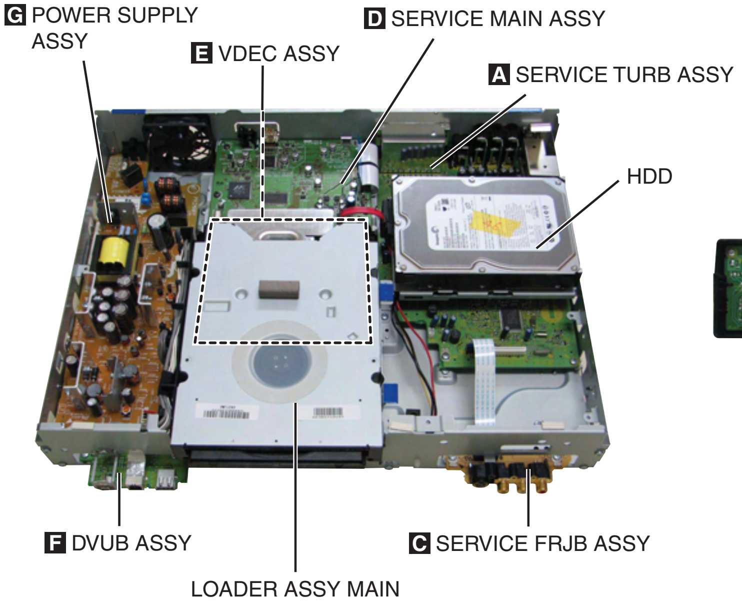
3.2 QUICK REFERENCE

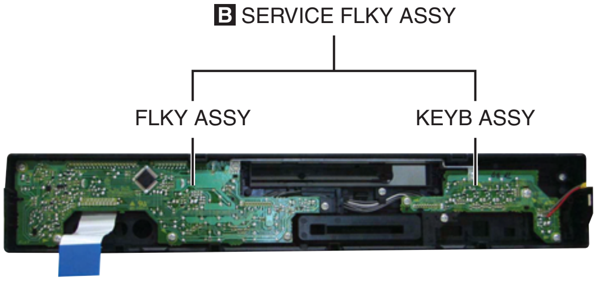
Description of work	Procedure	Jigs
LD power adjustment	[ESC]+[CX]+[1]+[0]	GGF1381 : Service Remote Control Unit
		GGV1054 : CD-ROM (CDT-313)
		GGV1036 : DVD-ROM DL (DVDT-002)
		GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)
		GGV1282 : Blank DVD-RW (JVC VD-W120XH5)
		GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)
ID input	[ESC]+[STEREO]	GGF1381 : Service Remote Control Unit
		GGV1305 : ID disc
Firmware update	[REC STOP]+[PLAY]	Update disc
Version check	[ESC]+[DISP]	GGF1381 : Service Remote Control Unit
Error Rate Measurement	[ESC]+[DISP]+[DIG/ANA] × twice	GGF1381 : Service Remote Control Unit
		Operation check disc (See remarks)
HDD Check Mode	[ESC]+[CX]+[0]+[1]	GGF1381 : Service Remote Control Unit
Indication of VR-playback-related error log	[ESC]+[DISP]+[5]+[DIG/ANA]	GGF1381 : Service Remote Control Unit
Indication of VR-recording-related error log	[ESC]+[DISP]+[4]+[DIG/ANA] × 3times	GGF1381 : Service Remote Control Unit

Remarks

Disc for check of recording/playback operations	Operation check discs (manufacturers and model numbers)	Error rate threshold
(Note) When judging the drive quality, make sure to use the operation check disc.	GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)	3.3e-3 or below
	GGV1279 : Blank DVD-R DL (MCM VHR21YD1)	L0 : 3.3e-3 or below
		L1 : 3.3e-3 or below
	GGV1280 : Blank DVD+R (That's DR+120TY5PA)	3.3e-3 or below
	GGV1281 : Blank DVD+R DL (MCM VTR21N1)	L0 : 3.3e-3 or below
		L1 : 3.3e-3 or below
	GGV1189 : Blank DVD-RW (JVC VD-W120N10)	3.3e-3 or below
	GGV1282 : Blank DVD-RW [RW2] (JVC VD-W120XH5)	3.3e-3 or below
	GGV1283 : Blank DVD+RW (RICOH D4RWV-S3CW)	3.3e-3 or below
	GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)	3.3e-3 or below
	GGV1036 : DVD-ROM DL (DVDT-002)	L0/L1 : 8.0e-4 or below
How to read error rate	X.Xe-Y Y: The bigger the better, X X: The smaller the better	
How to exit from Service Mode	[ESC]	

3.3 PCB LOCATIONS





NOTES: ● *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
● *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*

◆ LIST OF ASSEMBLIES

Mark	No. Description	Part No.
NSP	1.. TUJB ASSY (TLXV)	VWM2455
NSP	1.. TUJB ASSY (TFXV)	VWM2456
	2.. SERVICE TURB ASSY (TLXV)	VXX3273
	2.. SERVICE TURB ASSY(TFXV)	VXX3274
	2.. DVUB ASSY	VWV2324
NSP	1.. FLKB ASSY	VWM2454
	2.. SERVICE FLKY ASSY	VXX3269
	2.. SERVICE FRJB ASSY	VXX3271
	1.. VDEC ASSY	VWV2331
	1.. SERVICE MAIN ASSY	VXX3268
⚠	1.. POWER SUPPLY ASSY	VWR1412

3.4 JIGS LIST

■ Jigs List

Name	Jig No.	Remarks
Service Remote Control Unit	GGF1381	Adjustment, diagnosis
DVD Test Disc (DVD-Video)	GGV1025	Check of DVD-Video
DVD Recorder Data Disc Type2	——— (*)	Diagnosis (ID data setting)
FFC Cable (22p)	GGD1387	Diagnosis of MAIN Assy, 2 cables needs to be used
FFC Cable (30p)	GGD1171	Diagnosis of MAIN Assy
CD-ROM	GGV1054	LD Power Adjustment
DVD-ROM DL	GGV1036	LD Power Adjustment
Blank DVD-R	GGV1278	LD Power Adjustment
Blank DVD-RW	GGV1282	LD Power Adjustment
Blank DVD-RAM	GGV1284	LD Power Adjustment
Disc Ejection Rod	GGF1529	Emergency Disc Ejection
USB Cable	GGD1445	USB Check Mode
RS-232C I/F Jig	GGF1348	Serial Update
FFC Cable (7P)	GGD1231	Serial Update

(*) Be sure to use the latest disc (Type 2).
In Oct. 2007, the latest disc is GGV1305.

■ Cleaning

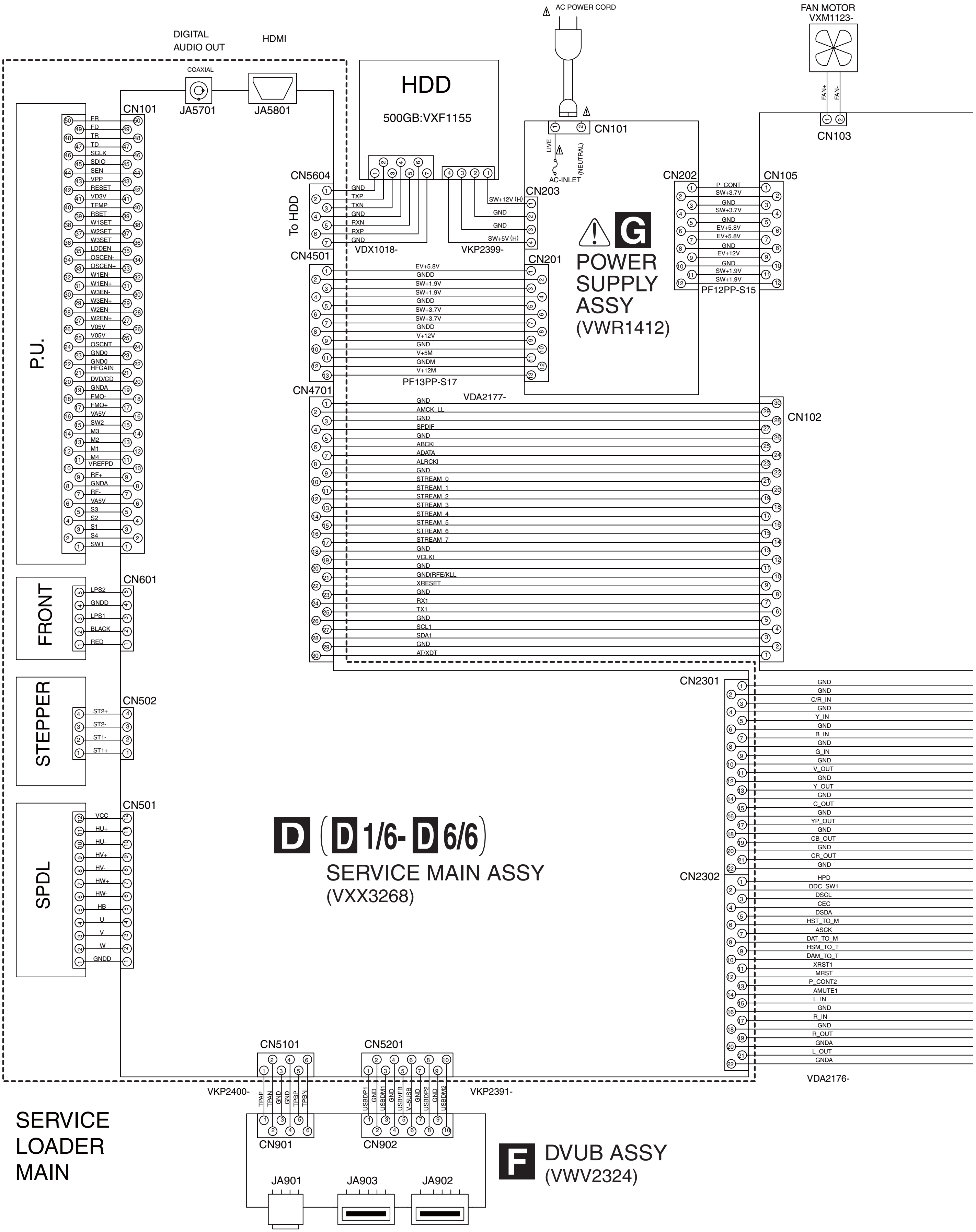
Before shipping out the product, be sure to clean the following positions by using the prescribed cleaning tools:

Position to be cleaned	Cleaning tools
Pickup lenses	Cleaning liquid : GEM1004 Cleaning paper : GED-008

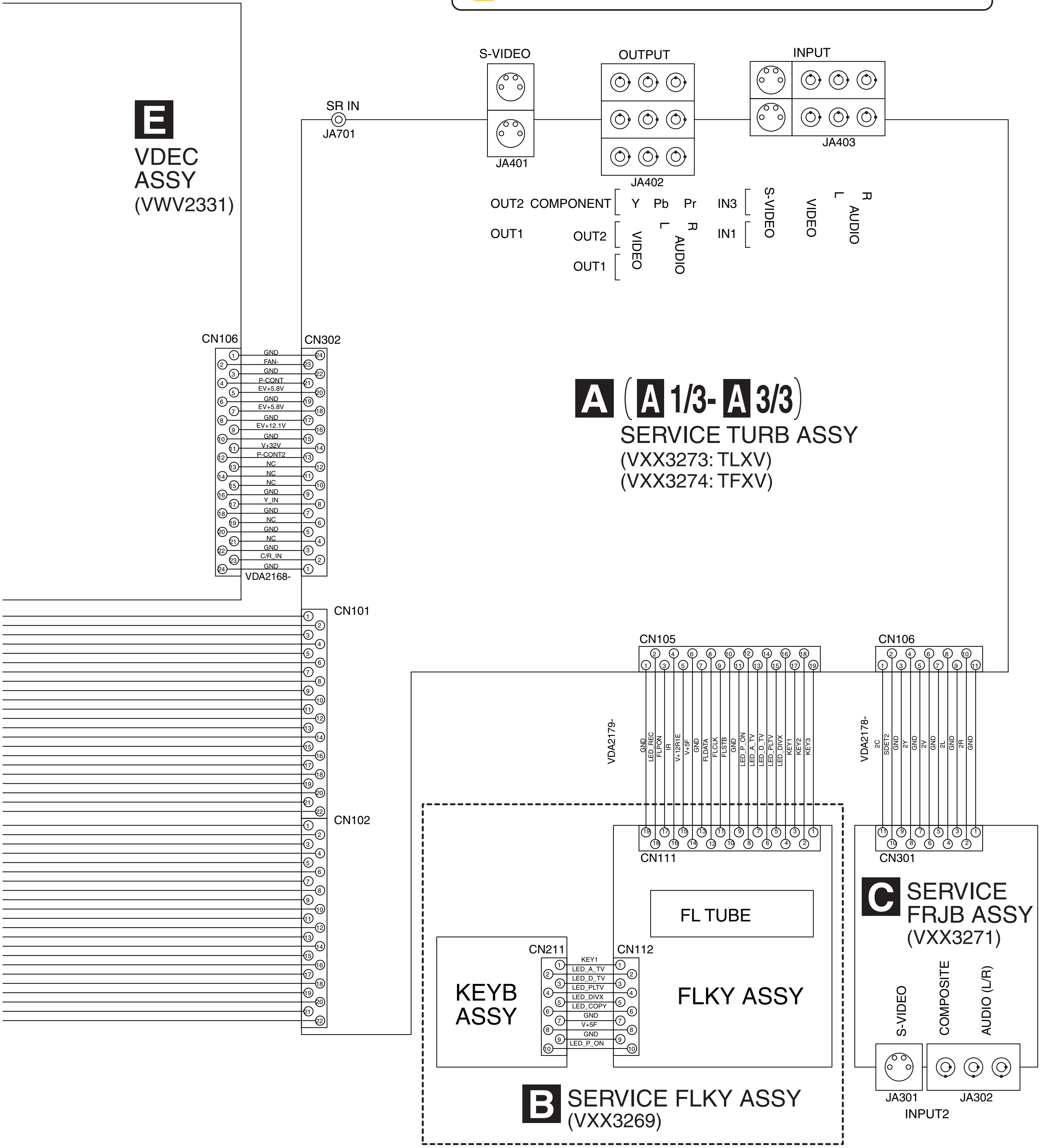
Position to be cleaned	Cleaning tools
Fans	Cleaning paper : GED-008

4. BLOCK DIAGRAM

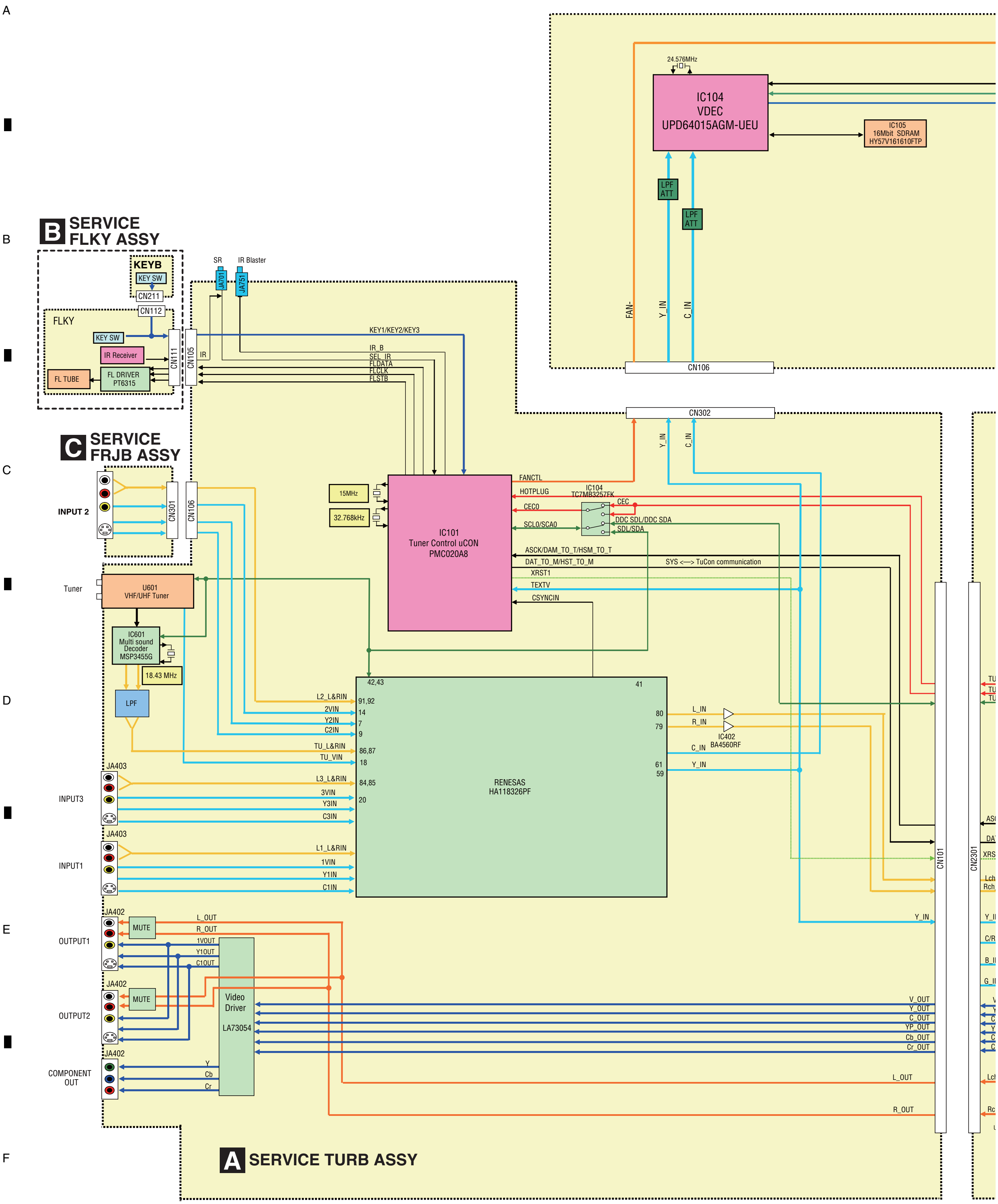
4.1 OVERALL WIRING DIAGRAM

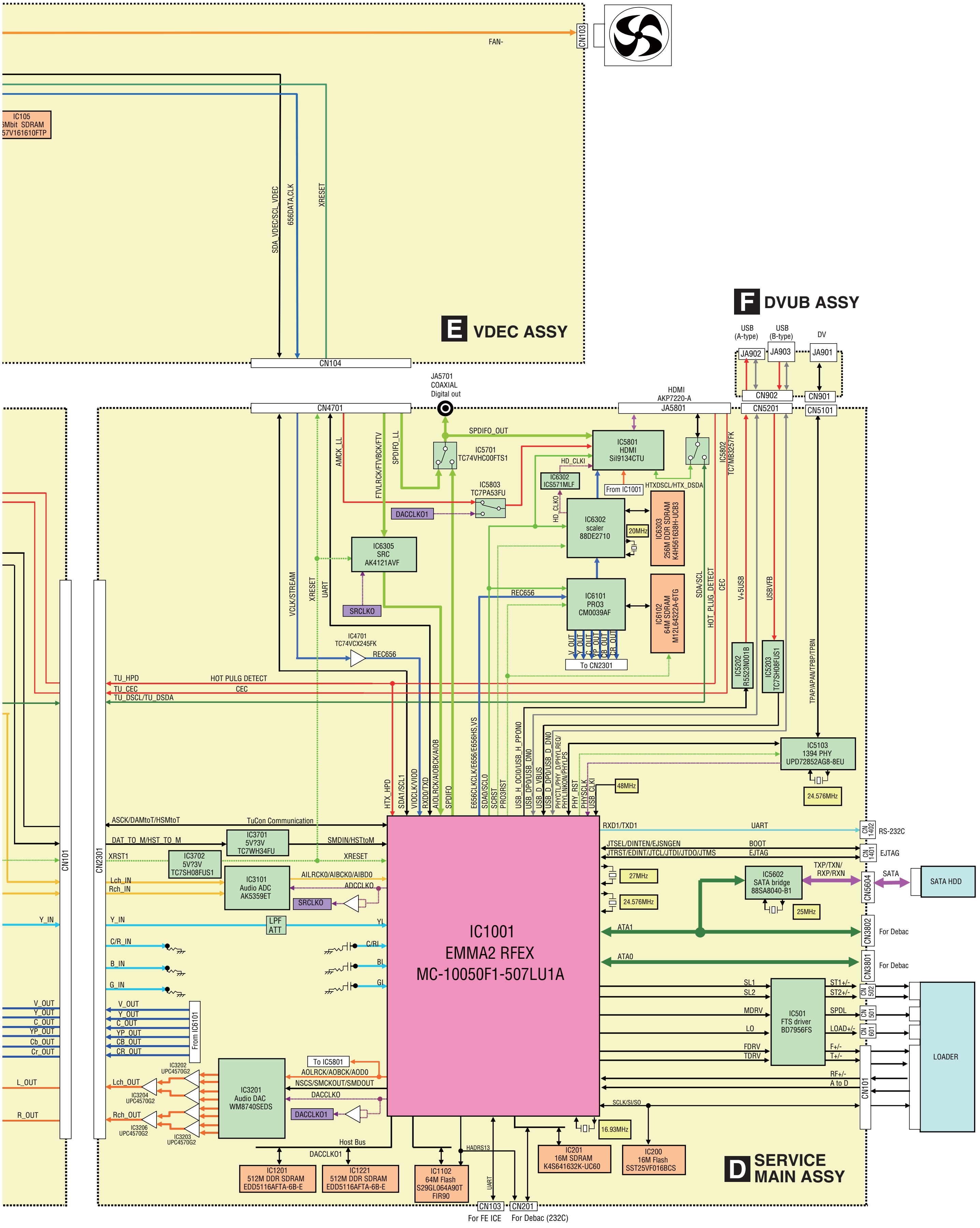


When ordering service parts, be sure to refer to "EXPLODED VIEWS and PARTS LIST" or "PCB PARTS LIST".
The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.
▬ : The power supply is shown with the marked box.

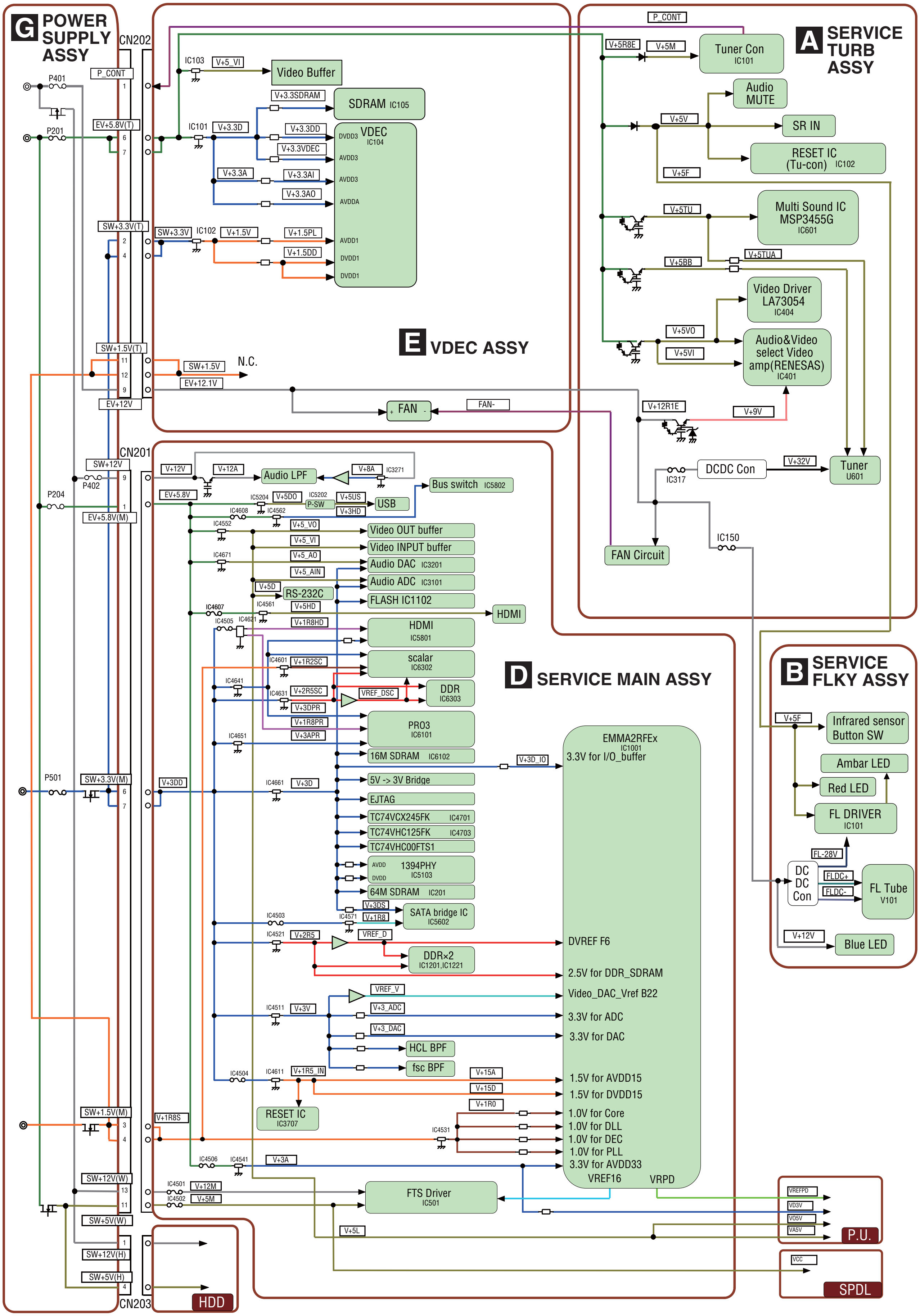


4.2 OVERALL BLOCK DIAGRAM



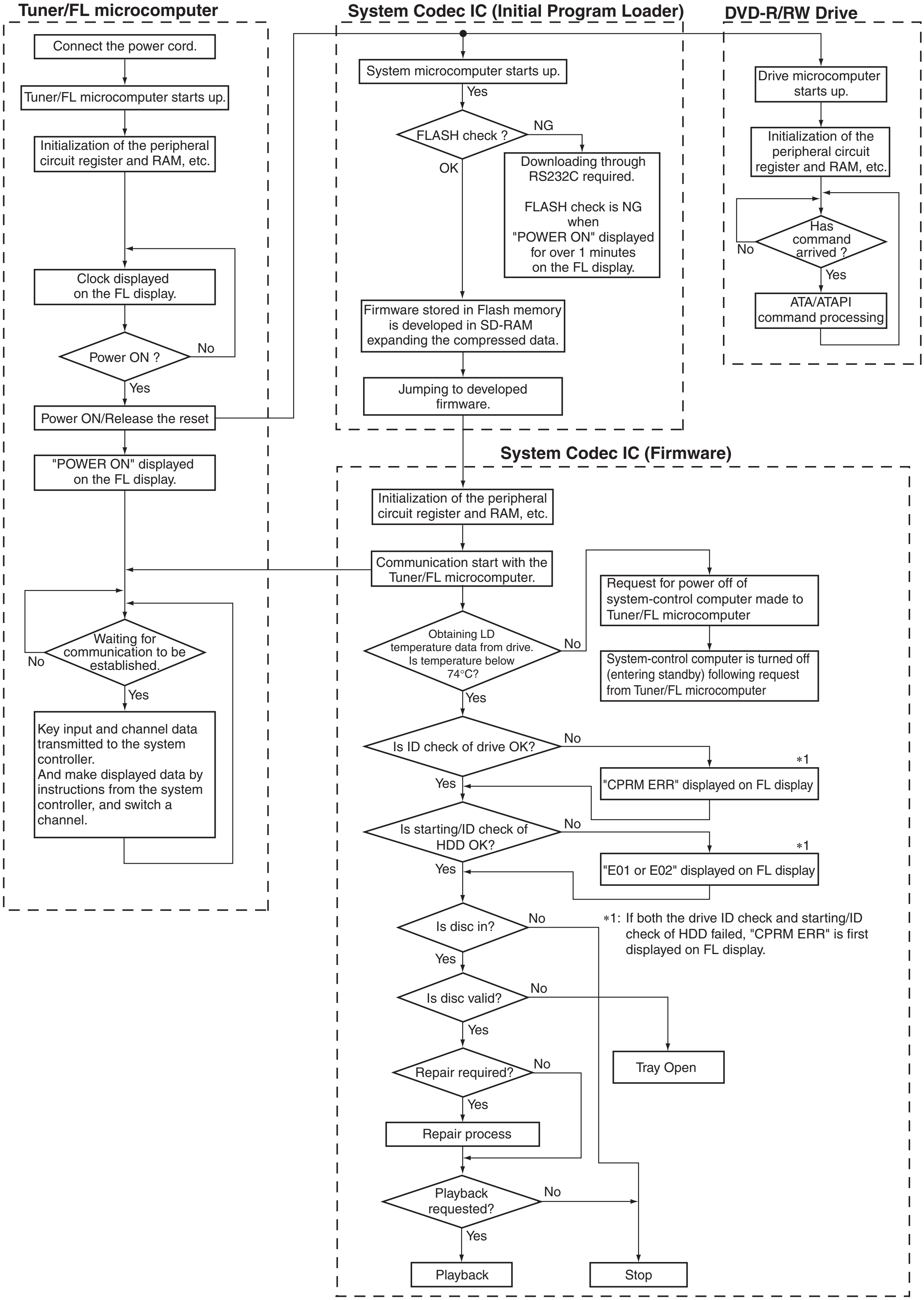

FAN-
CN103
IC105
SMbit SDRAM
57V161610FTP
SDA_VDEC/SCL_VDEC
656DATA,CLK
XRESET
E VDEC ASSY
CN104
F DVUB ASSY
USB (A-type)
USB (B-type)
DV
JA902
JA903
JA901
CN902
CN901
CN5201
CN5101
JA5701
COAXIAL
Digital out
HDMI
AKP7220-A
JA5801
CN4701
SPDIFO_OUT
IC5701
TC74VHC00FTS1
IC5801
HDMI
SiI9134CTU
HD_CLKI
IC6302
ICS571MLF
From IC1001
HTXDSCL/HTX_DSDA
IC5802
TC7MB3257FK
IC5803
TC7PA53FU
AMCK_LL
FTVLRCK/FTVBCK/FTV
SPDIFO_LL
DACCLKO1
HD_CLKO
IC6302
scaler
88DE2710
20MHz
IC6303
256M DDR SDRAM
K4H561638H-UCB3
IC6305
SRC
AK4121AVF
SRCLKO
REC656
IC6101
PRO3
CM0039AF
IC6102
64M SDRAM
M12L64322A-6TG
Y_OUT
C_OUT
YP_OUT
CB_OUT
CR_OUT
To CN2301
SDA/SCL
HOT_PLUG_DETECT
CEC
V+5USB
USBVFB
IC5202
R5523N001B
IC5203
TC7SH08FUS1
TPAP/APAN/TPBP/TPBN
VCLK/STREAM
XRESET
UART
IC4701
TC74VCX245FK
REC656
TU_HPD
HOT PULG DETECT
TU_CEC
CEC
TU_DSCL/TU_DSDA
IC5103
1394 PHY
UPD72852AG8-8EU
24.576MHz
48MHz
HTX_HPD
SDA1/SCL1
VIOCLK/VIOD
RXD0/TXD
AIOLRCK/AIOBCK/AIOB
SPDIFO
E656CLKCLK/E656/E656HS,VS
SDA0/SCL0
SCRST
PRO3RST
USB_H_OCI0/USB_H_PPON0
USB_DP0/USB_DN0
USB_D_VBUS
USB_D_DP0/USB_D_DN0
PHYCTL/PHY_D/PHYLREQ/
PHYLINKON/PHYLPS
PHY_RST
PHYSCLK
USB_CLKI
ASCK/DAMtoT/HSMtoT
TuCon Communication
DAT_TO_M/HST_TO_M
IC3701
5V?3V
TC7WH34FU
SMDIN/HSTtoM
XRST1
IC3702
5V?3V
TC7SH08FUS1
XRESET
Lch_IN
Rch_IN
IC3101
Audio ADC
AK5359ET
AILRCKO/AIBCKO/AIBDO
ADCCLKO
SRCLKO
Y_IN
LPF
ATT
YI
C/R_IN
B_IN
G_IN
C/RI
BI
GI
CN101
CN2301
V_OUT
Y_OUT
C_OUT
YP_OUT
Cb_OUT
Cr_OUT
CB_OUT
CR_OUT
From IC6101
L_OUT
R_OUT
Lch_OUT
Rch_OUT
IC3202
UPC4570G2
IC3204
UPC4570G2
IC3206
UPC4570G2
IC3203
UPC4570G2
IC3201
Audio DAC
WM8740SEDS
To IC5801
AOLRCK/AOBCK/AOD0
NSCS/SMCKOUT/SMDOUT
DACCLKO
DACCLKO1
IC1001
EMMA2 RFEX
MC-10050F1-507LU1A
RXD1/TXD1
UART
CN1402
RS-232C
JTSEL/DINTEN/EJSNGEN
BOOT
JTRST/EDINT/JTCL/JTDI/JTDO/JTMS
EJTAG
CN1401
EJTAG
27MHz
24.576MHz
IC5602
SATA bridge
88SA8040-B1
TXP/TXN/
RXP/RXN
CN5604
SATA
SATA HDD
25MHz
ATA1
CN3802
For Debac
ATA0
CN3801
For Debac
SL1
SL2
MDRV
LO
FDRV
TDRV
IC501
FTS driver
BD7956FS
ST1+/-
ST2+/-
SPDL
LOAD+/-
F+/-
T+/-
CN502
CN501
CN601
CN101
LOADER
RF+/-
A to D
SCLK/SI/SO
16.93MHz
IC201
16M SDRAM
K4S641632K-UC60
IC200
16M Flash
SST25VF016BCS
D SERVICE MAIN ASSY
Host Bus
DACCLKO1
HADRS13
IC1201
512M DDR SDRAM
EDD5116AFTA-6B-E
IC1221
512M DDR SDRAM
EDD5116AFTA-6B-E
IC1102
64M Flash
S29GL064A90T
FIR90
UART
CN103
CN201
For FE ICE
For Debac (232C)

4.3 POWER BLOCK DIAGRAM

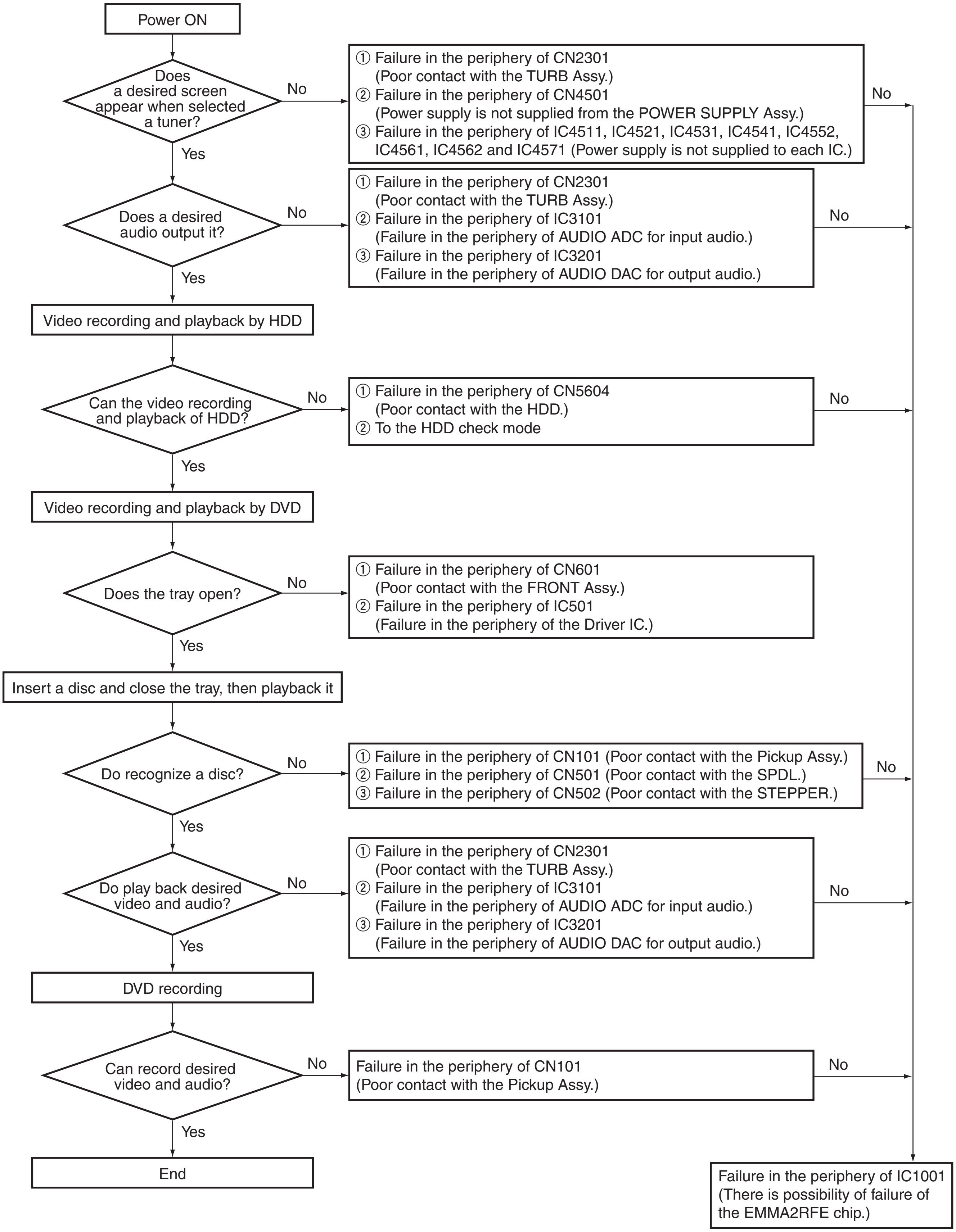


5. DIAGNOSIS

5.1 SETUP SEQUENCE


Tuner/FL microcomputer
Connect the power cord.
Tuner/FL microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Clock displayed on the FL display.
Power ON ?
No
Yes
Power ON/Release the reset
"POWER ON" displayed on the FL display.
Waiting for communication to be established.
No
Yes
Key input and channel data transmitted to the system controller. And make displayed data by instructions from the system controller, and switch a channel.
System Codec IC (Initial Program Loader)
System microcomputer starts up.
Yes
FLASH check ?
NG
OK
Downloading through RS232C required.
FLASH check is NG when "POWER ON" displayed for over 1 minutes on the FL display.
Firmware stored in Flash memory is developed in SD-RAM expanding the compressed data.
Jumping to developed firmware.
DVD-R/RW Drive
Drive microcomputer starts up.
Initialization of the peripheral circuit register and RAM, etc.
Has command arrived ?
No
Yes
ATA/ATAPI command processing
System Codec IC (Firmware)
Initialization of the peripheral circuit register and RAM, etc.
Communication start with the Tuner/FL microcomputer.
Obtaining LD temperature data from drive. Is temperature below 74°C?
No
Yes
Request for power off of system-control computer made to Tuner/FL microcomputer
System-control computer is turned off (entering standby) following request from Tuner/FL microcomputer
Is ID check of drive OK?
No
Yes
∗1
"CPRM ERR" displayed on FL display
Is starting/ID check of HDD OK?
No
Yes
∗1
"E01 or E02" displayed on FL display
∗1: If both the drive ID check and starting/ID check of HDD failed, "CPRM ERR" is first displayed on FL display.
Is disc in?
No
Yes
Is disc valid?
No
Yes
Tray Open
Repair required?
No
Yes
Repair process
Playback requested?
No
Yes
Playback
Stop

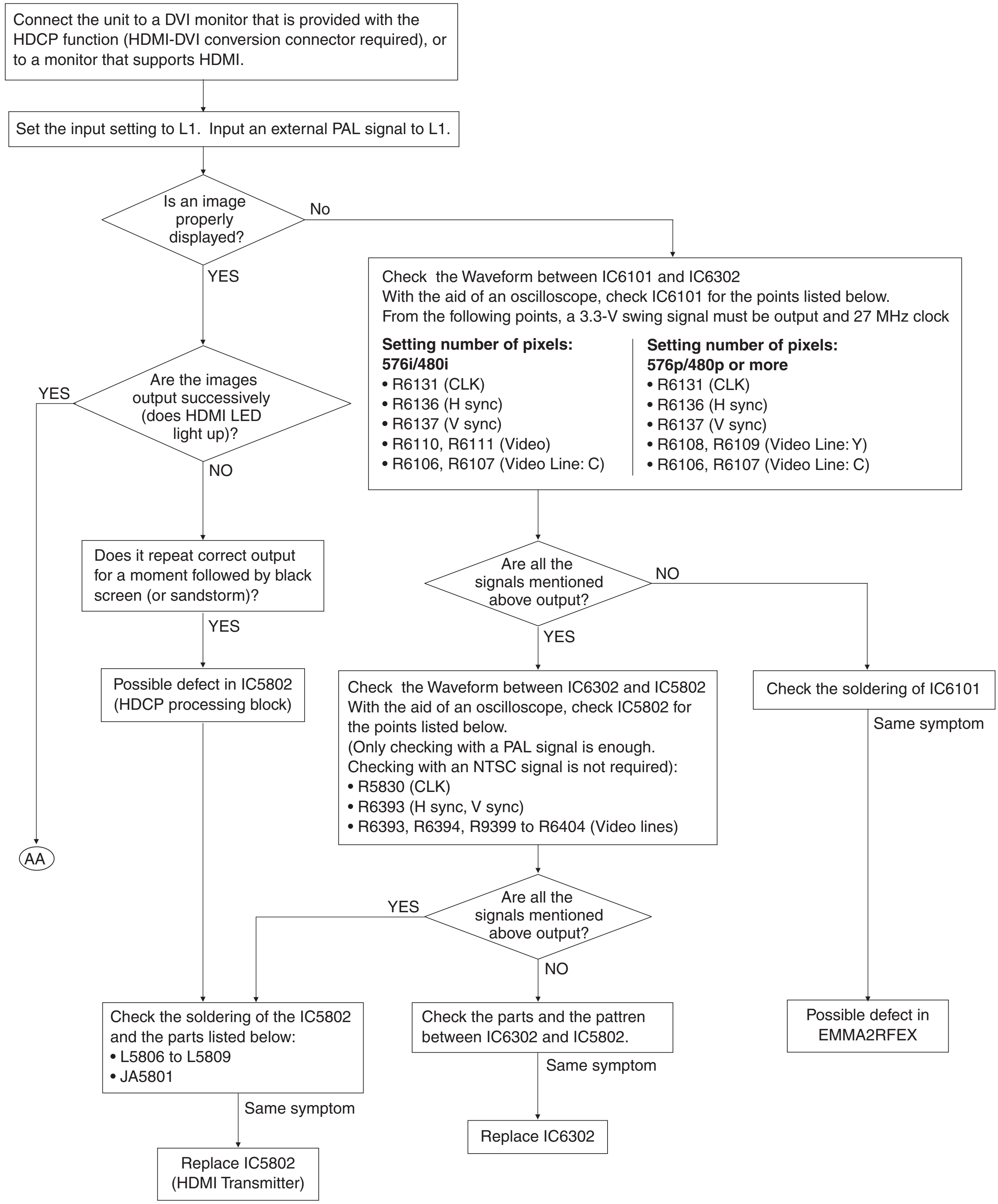
5.2 DIAGNOSIS OF THE MAIN ASSY


Power ON
Does a desired screen appear when selected a tuner?
No
① Failure in the periphery of CN2301 (Poor contact with the TURB Assy.)
② Failure in the periphery of CN4501 (Power supply is not supplied from the POWER SUPPLY Assy.)
③ Failure in the periphery of IC4511, IC4521, IC4531, IC4541, IC4552, IC4561, IC4562 and IC4571 (Power supply is not supplied to each IC.)
No
Yes
Does a desired audio output it?
No
① Failure in the periphery of CN2301 (Poor contact with the TURB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
Video recording and playback by HDD
Can the video recording and playback of HDD?
No
① Failure in the periphery of CN5604 (Poor contact with the HDD.)
② To the HDD check mode
No
Yes
Video recording and playback by DVD
Does the tray open?
No
① Failure in the periphery of CN601 (Poor contact with the FRONT Assy.)
② Failure in the periphery of IC501 (Failure in the periphery of the Driver IC.)
Yes
Insert a disc and close the tray, then playback it
Do recognize a disc?
No
① Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
② Failure in the periphery of CN501 (Poor contact with the SPDL.)
③ Failure in the periphery of CN502 (Poor contact with the STEPPER.)
No
Yes
Do play back desired video and audio?
No
① Failure in the periphery of CN2301 (Poor contact with the TURB Assy.)
② Failure in the periphery of IC3101 (Failure in the periphery of AUDIO ADC for input audio.)
③ Failure in the periphery of IC3201 (Failure in the periphery of AUDIO DAC for output audio.)
No
Yes
DVD recording
Can record desired video and audio?
No
Failure in the periphery of CN101 (Poor contact with the Pickup Assy.)
No
Yes
End
Failure in the periphery of IC1001 (There is possibility of failure of the EMMA2RFE chip.)

◆ Diagnosis of the HDMI Block

1. In a case when only the HDMI video is not outputted

*This flowchart shows how to confirm the output from the HDMI block on the basis that an external input signal to the L1 connector is through-output from the analog output connector properly.



Connect the unit to a DVI monitor that is provided with the HDCP function (HDMI-DVI conversion connector required), or to a monitor that supports HDMI.

Set the input setting to L1. Input an external PAL signal to L1.

Is an image properly displayed?

Are the images output successively (does HDMI LED light up)?

Does it repeat correct output for a moment followed by black screen (or sandstorm)?

Possible defect in IC5802 (HDCP processing block)

Check the Waveform between IC6101 and IC6302
With the aid of an oscilloscope, check IC6101 for the points listed below.
From the following points, a 3.3-V swing signal must be output and 27 MHz clock

Setting number of pixels: 576i/480i	Setting number of pixels: 576p/480p or more
• R6131 (CLK)	• R6131 (CLK)
• R6136 (H sync)	• R6136 (H sync)
• R6137 (V sync)	• R6137 (V sync)
• R6110, R6111 (Video)	• R6108, R6109 (Video Line: Y)
• R6106, R6107 (Video Line: C)	• R6106, R6107 (Video Line: C)

Are all the signals mentioned above output?

Check the Waveform between IC6302 and IC5802
With the aid of an oscilloscope, check IC5802 for the points listed below.
(Only checking with a PAL signal is enough. Checking with an NTSC signal is not required):
- R5830 (CLK)
- R6393 (H sync, V sync)
- R6393, R6394, R9399 to R6404 (Video lines)

Check the soldering of IC6101

Possible defect in EMMA2RFEX

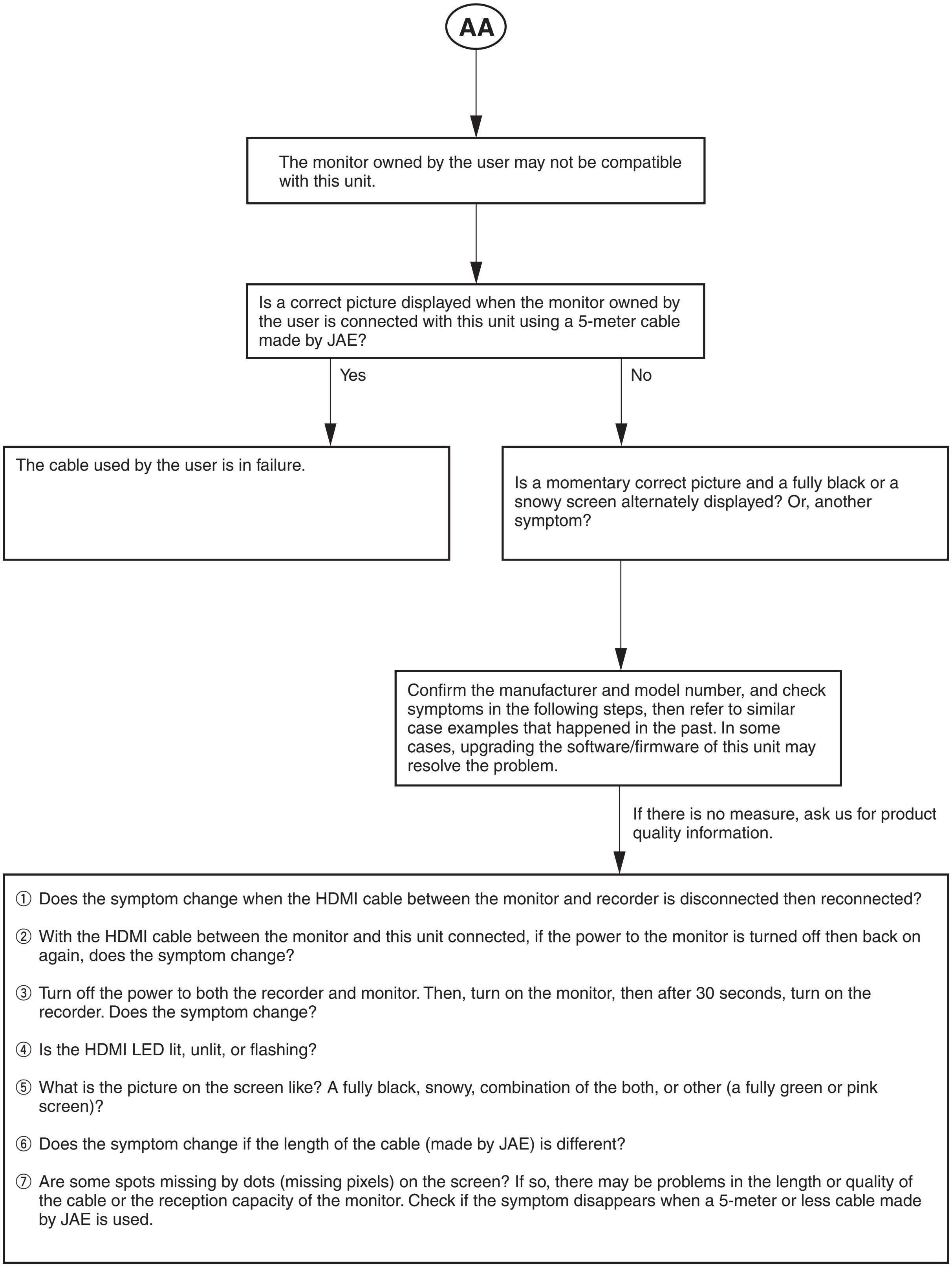
Are all the signals mentioned above output?

Check the soldering of the IC5802 and the parts listed below:
- L5806 to L5809
- JA5801

Replace IC5802 (HDMI Transmitter)

Check the parts and the pattren between IC6302 and IC5802.

Replace IC6302



The monitor owned by the user may not be compatible with this unit.

Is a correct picture displayed when the monitor owned by the user is connected with this unit using a 5-meter cable made by JAE?

Yes: The cable used by the user is in failure.

No: Is a momentary correct picture and a fully black or a snowy screen alternately displayed? Or, another symptom?

Confirm the manufacturer and model number, and check symptoms in the following steps, then refer to similar case examples that happened in the past. In some cases, upgrading the software/firmware of this unit may resolve the problem.

If there is no measure, ask us for product quality information.

① Does the symptom change when the HDMI cable between the monitor and recorder is disconnected then reconnected?

② With the HDMI cable between the monitor and this unit connected, if the power to the monitor is turned off then back on again, does the symptom change?

③ Turn off the power to both the recorder and monitor. Then, turn on the monitor, then after 30 seconds, turn on the recorder. Does the symptom change?

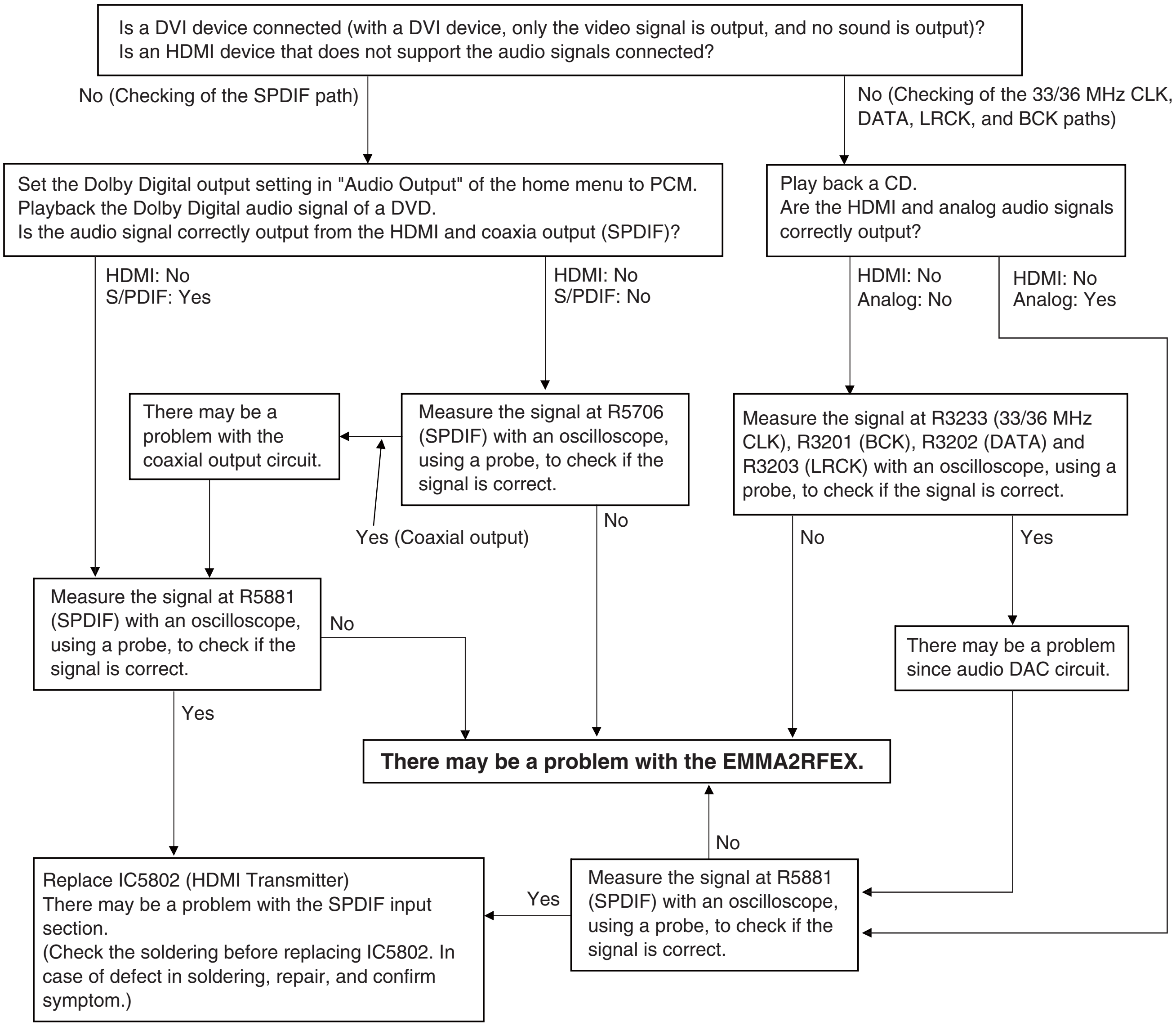
④ Is the HDMI LED lit, unlit, or flashing?

⑤ What is the picture on the screen like? A fully black, snowy, combination of the both, or other (a fully green or pink screen)?

⑥ Does the symptom change if the length of the cable (made by JAE) is different?

⑦ Are some spots missing by dots (missing pixels) on the screen? If so, there may be problems in the length or quality of the cable or the reception capacity of the monitor. Check if the symptom disappears when a 5-meter or less cable made by JAE is used.

2. In a case when only the HDMI audio is not outputted


Is a DVI device connected (with a DVI device, only the video signal is output, and no sound is output)?
Is an HDMI device that does not support the audio signals connected?
No (Checking of the SPDIF path)
No (Checking of the 33/36 MHz CLK, DATA, LRCK, and BCK paths)
Set the Dolby Digital output setting in "Audio Output" of the home menu to PCM.
Playback the Dolby Digital audio signal of a DVD.
Is the audio signal correctly output from the HDMI and coaxia output (SPDIF)?
Play back a CD.
Are the HDMI and analog audio signals correctly output?
HDMI: No
S/PDIF: Yes
HDMI: No
S/PDIF: No
HDMI: No
Analog: No
HDMI: No
Analog: Yes
There may be a problem with the coaxial output circuit.
Measure the signal at R5706 (SPDIF) with an oscilloscope, using a probe, to check if the signal is correct.
Measure the signal at R3233 (33/36 MHz CLK), R3201 (BCK), R3202 (DATA) and R3203 (LRCK) with an oscilloscope, using a probe, to check if the signal is correct.
Yes (Coaxial output)
No
No
Yes
Measure the signal at R5881 (SPDIF) with an oscilloscope, using a probe, to check if the signal is correct.
No
There may be a problem since audio DAC circuit.
Yes
There may be a problem with the EMMA2RFEX.
No
Replace IC5802 (HDMI Transmitter)
There may be a problem with the SPDIF input section.
(Check the soldering before replacing IC5802. In case of defect in soldering, repair, and confirm symptom.)
Yes
Measure the signal at R5881 (SPDIF) with an oscilloscope, using a probe, to check if the signal is correct.

6. SERVICE MODE

◆ Overview and Purposes

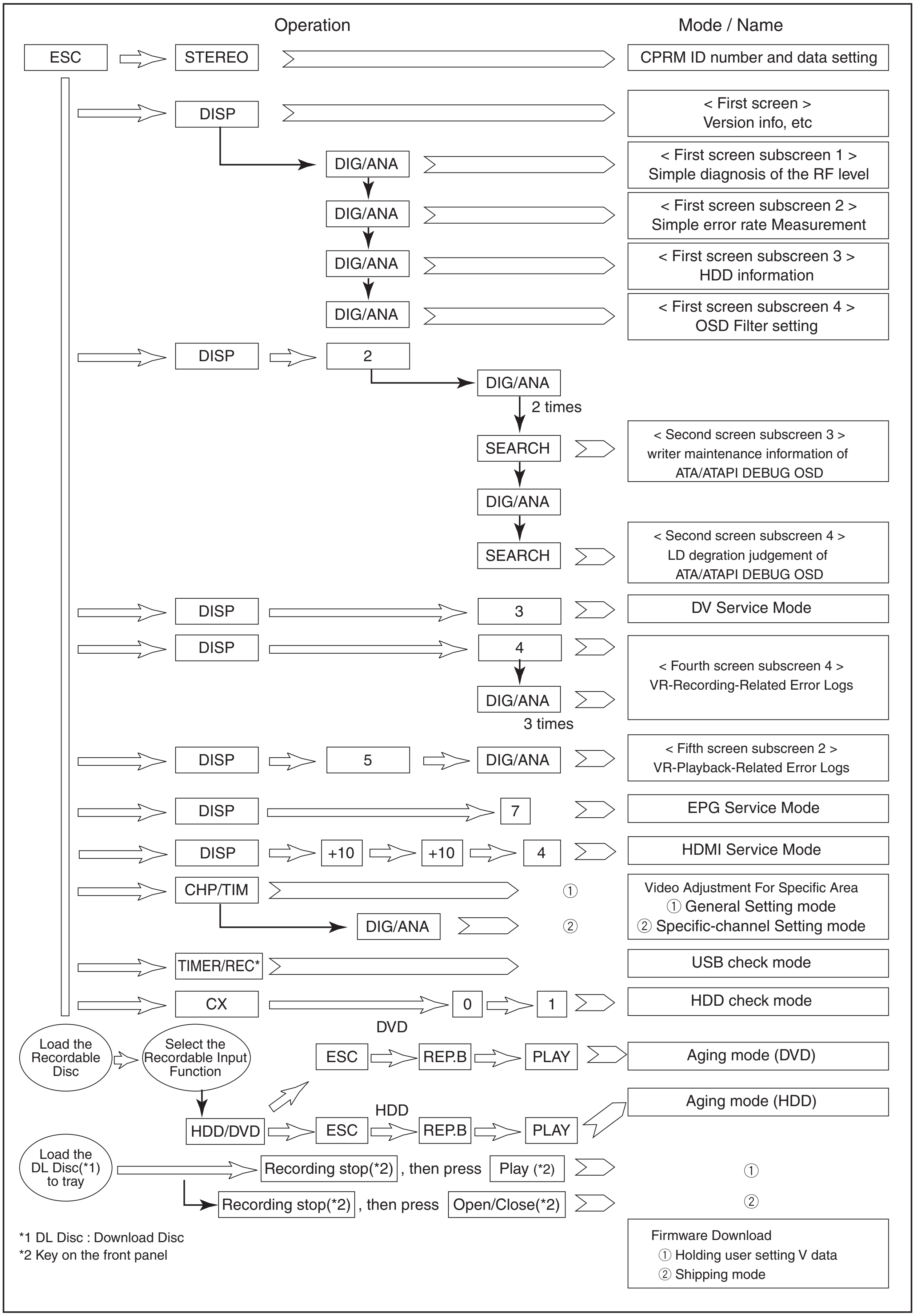
To be used to check the status of the product and to collect the information for failure diagnosis.
The following information to be used for servicing is displayed:

[1] First screen	: Version, HDD information, etc.
[2] Second screen	: ATA/ATAPI debug screen (Writer information)
[4] Fourth screen	: VR-recording-related error logs
[5] Fifth screen	: VR-playback-related error logs

Each screen has sublevel screens.

[Note] After entering any Service mode screen, to shift to another Service mode screen, first quit that Service mode screen then enter another Service mode screen.

◆ SERVICE MODE MAP


Operation
Mode / Name
ESC
STEREO
CPRM ID number and data setting
DISP
< First screen >
Version info, etc
DIG/ANA
< First screen subscreen 1 >
Simple diagnosis of the RF level
DIG/ANA
< First screen subscreen 2 >
Simple error rate Measurement
DIG/ANA
< First screen subscreen 3 >
HDD information
DIG/ANA
< First screen subscreen 4 >
OSD Filter setting
DISP
2
DIG/ANA
2 times
SEARCH
< Second screen subscreen 3 >
writer maintenance information of
ATA/ATAPI DEBUG OSD
DIG/ANA
SEARCH
< Second screen subscreen 4 >
LD degration judgement of
ATA/ATAPI DEBUG OSD
DISP
3
DV Service Mode
DISP
4
DIG/ANA
3 times
< Fourth screen subscreen 4 >
VR-Recording-Related Error Logs
DISP
5
DIG/ANA
< Fifth screen subscreen 2 >
VR-Playback-Related Error Logs
DISP
7
EPG Service Mode
DISP
+10
+10
4
HDMI Service Mode
CHP/TIM
①
DIG/ANA
②
Video Adjustment For Specific Area
① General Setting mode
② Specific-channel Setting mode
TIMER/REC*
USB check mode
CX
0
1
HDD check mode
Load the Recordable Disc
Select the Recordable Input Function
DVD
ESC
REP.B
PLAY
Aging mode (DVD)
HDD/DVD
HDD
ESC
REP.B
PLAY
Aging mode (HDD)
Load the DL Disc(*1) to tray
Recording stop(*2) , then press Play (*2)
①
Recording stop(*2) , then press Open/Close(*2)
②
Firmware Download
① Holding user setting V data
② Shipping mode

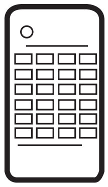
*1 DL Disc : Download Disc
*2 Key on the front panel

6.1 VERSION INFORMATION, ETC. (FIRST SCREEN)

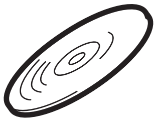
[Purposes]

To check the versions of the system control computer, TUNER microcomputer, and firmware for the drive, simple measurement of the RF level for the U/V tuner, results of the simple error rate measurement, HDD information, and OSD Filter setting

[Tools to be used]



Remote control unit for servicing (GGF1381)



Aluminum-coated test disc (GGV1025)

[How to enter]

While the GUI screen is not displayed, press the ESC then DISP keys.

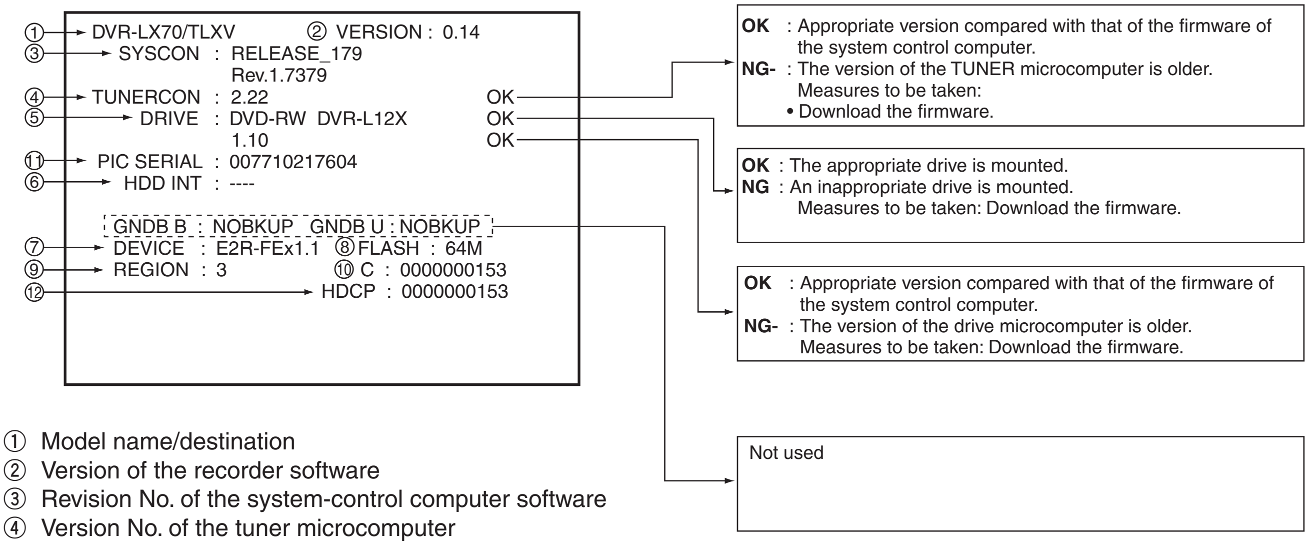
How to enter and change subscreens of the first screen: While the first screen is displayed, press the DIG/ANA key repeatedly until your desired subscreen is displayed. The subscreens change cyclically.

[How to quit]

Press the ESC key.

[Description]

(1) First screen



```
① DVR-LX70/TLXV          ② VERSION : 0.14
③    SYSCON  : RELEASE_179
                Rev.1.7379
④ TUNERCON   : 2.22                    OK
⑤      DRIVE : DVD-RW  DVR-L12X        OK
               1.10                    OK
⑪ PIC SERIAL : 007710217604
⑥   HDD INT  : ----

    GNDB B : NOBKUP  GNDB U : NOBKUP
⑦   DEVICE  : E2R-FEx1.1  ⑧FLASH : 64M
⑨   REGION  : 3            ⑩ C : 0000000153
⑫                         HDCP : 0000000153
```

OK : Appropriate version compared with that of the firmware of the system control computer.
NG- : The version of the TUNER microcomputer is older.
Measures to be taken:
• Download the firmware.

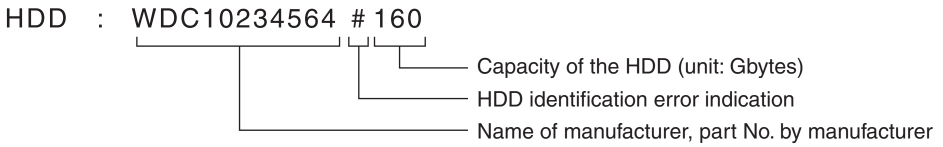
OK : The appropriate drive is mounted.
NG : An inappropriate drive is mounted.
Measures to be taken: Download the firmware.

OK : Appropriate version compared with that of the firmware of the system control computer.
NG- : The version of the drive microcomputer is older.
Measures to be taken: Download the firmware.

Not used

① Model name/destination
② Version of the recorder software
③ Revision No. of the system-control computer software
④ Version No. of the tuner microcomputer
Result of the combination ckeck with system u-com
⑤ Information on the built-in drive
(Model name, version No., model type)
⑥ Data of the built-in HDD, capacity of the HDD
⑦ DEVICE information (EMMA type, ES No.)
⑧ FLASH ROM information
⑨ Region No.
⑩ CPRM information (CPRM key No.)
⑪ PICUP SERIAL No.
⑫ HDCP information (HDMI authentication key)
Same number as that for CPRM.

- **Details on HDD data are described below:**


HDD : WDC10234564 #160
Capacity of the HDD (unit: Gbytes)
HDD identification error indication
Name of manufacturer, part No. by manufacturer

If any abnormality exists in HDD connection, the indications shown in Table 1 below are displayed.

Table 1: HDD recognition status represented by the HDD data display

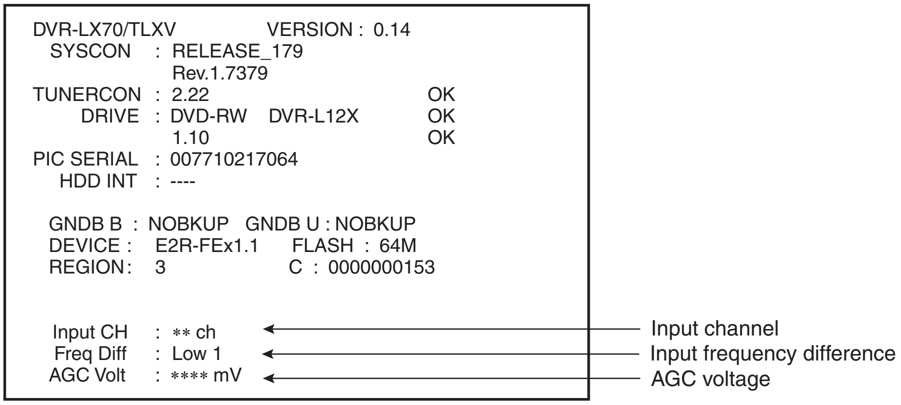
HDD identification conditions	Example of HDD data to be displayed	Remarks
Failure in physical identification of HDD (no connection, defective HDD, interface error)	Blank space	• Check the connection to the SATA connector. • Replace the SATA flexible cable and connector. • Replace the HDD. • Replace the resistor in the SATA communication line.
Physical identification of HDD possible, but not identified (CPRM ID is not input.)	WDC 10234564 # 160	• Input the CPRM ID.
Physical identification of HDD possible, HDD identified, but failure in logical formatting	WDC 10234564 ! 160	"!" represents an HDD-recognition error. • Initialize the HDD or erase all titles.
Physical identification of HDD possible, HDD identified, and correct logical formatting (HDD correctly identified)	WDC 10234564 160	

If an error indication in the HDD data does not disappear even after the above measures were taken, refer to another sheet of "HDD Service Mode."

◆ Simple Diagnosis of the RF Level (Subscreen 1)

[Purposes]	To check the RF signal of the U/V tuner by checking the input frequency difference and AGC voltage in this debug mode
[How to enter]	While the User Setting display is displayed, press the ESC, DISP, then DIG/ANA keys, in that order.
[How to quit]	Press the ESC key.

[Description]



```
DVR-LX70/TLXV              VERSION :  0.14
   SYSCON   :  RELEASE_179
               Rev.1.7379
TUNERCON  :  2.22                          OK
       DRIVE  :  DVD-RW    DVR-L12X        OK
               1.10                        OK
PIC SERIAL   :  007710217064
    HDD INT   :  ----

   GNDB B  :  NOBKUP   GNDB U : NOBKUP
   DEVICE :    E2R-FEx1.1      FLASH  :  64M
   REGION :    3                  C  :  0000000153


     Input CH     :  ** ch
     Freq Diff     :  Low 1
   AGC Volt      :  **** mV
```

Subscreen 1

1) Frequency Difference (Freq Diff)

How much tuning is off is monitored, as shown below:

Input Frequency		Display
Faraway		High 7
High (within 200kHz)		High 1~5
Just Tune		Center
Low	within 200kHz	Low 1~5
	over 200kHz	Low 7

2) AGC voltage (AGC Volt)

The gain controlled by the tuner is monitored to infer the input electric field intensity.
(The accuracy of inference differs depending on the product.)

	Field Intensity	**AGC VOL**
Intense field area (Clear image)	70 dBμ or more	3100 mV or less (TLXV) 3300 mV or more (TFXV)
Less intense field area (Noise may be generated.)	50 dBμ or more 70 dBμ or less	3100 - 4400 mV (TLXV) 3100 - 3300 mV (TFXV)
Weak field area (Much noise. EPG/VPS/PDC sometimes cannot be obtained.)	30 dBμ or more 50 dBμ or less	4400 mV or more (TLXV) (It is unable to discriminate under the weak field area.) 2600 - 3100 mV (TFXV)
Very weak field area (Image damaged. EPG/VPS/PDC cannot be obtained.)	30 dBμ or less	4400 mV or more (TLXV) 2600 mV or less (TFXV) (It is unable to discriminate.)

Tips:

For good reception, the field intensity must be 50 dBμ or more.
(AGC Volt 4400 mV or less: TLXV, AGC Volt 3100 mV or more: TFXV)
For accurate measurement, use a field intensity meter.

◆ Simple Error Rate Measurement (Subscreen 2)

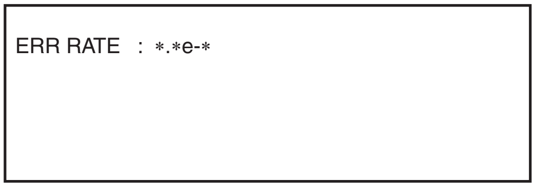
[How to enter]

- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key twice, in that order.
- While subscreen 1 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Measurement procedures]

① Display subscreen 2.
② Load the Test disc (GGV1025).
③ Judge the results of the error rate measurement by referring to Table 1.


ERR RATE : *.*e-*

Subscreen 2

[Tips]

During VR mode playback, the average value of the past 10 VOBUs is displayed. During DVD-Video or Video mode playback, the average value of the past 256 sectors is displayed.
During VR mode playback, the speed ratio of the drive (/: normal, no indication: double speed) is also displayed.

Table 1: Thresholds when determining OK or Error

Disc type	Recording mode	Finalized or not finalized	Reference value
DVD-VIDEO	–	–	8.0×10^{-4}
DVD-R	Video mode	Finalized	3.3×10^{-3}
		Not finalized	3.3×10^{-3}
DVD-RW	Video mode	Finalized	3.3×10^{-3}
		Not finalized	3.3×10^{-3}

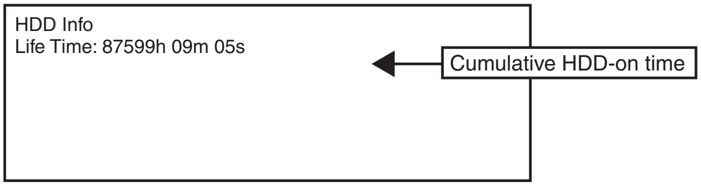
◆ HDD Information (Subscreen 3)

[How to enter]

- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key three times, in that order.
- While subscreen 2 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Mode description]



HDD Info
Life Time: 87599h 09m 05s

Cumulative HDD-on time

Subscreen 3

[Tips]

- **How the data on cumulative HDD-on time are processed in memory**

  Storage place:
  FLASH ROM

  Timing of referring to the data on cumulative HDD-on time:
  When the power is turned on, fails, the FLASH ROM is referred to.

  Timing of updating the data on cumulative HDD-on time:
  While the HDD is on, the data on cumulative HDD-on time in the RAM is updated every 3 seconds, and every time updating is executed the data are stored in the Backup SRAM. When the power is turned off, the data are stored in the FLASH ROM.

- **How to clear the data on cumulative HDD-on time**

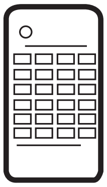
  FLASH ROM:
  When the HDD Identification Setting is performed, the data on cumulative HDD-on time are automatically cleared. The HDD Identification Setting is automatically performed when the CPRM setting is performed on the CPRM setting screen (to display the CPRM setting screen, press the ESC then the STEREO keys).

  Notes:
  - The data on cumulative HDD-on time are not cleared when resetting to factory-preset values is performed.
  - The data on cumulative HDD-on time are not cleared when the system-control computer software is downloaded.

◆ OSD Filter Setting (Subscreen 4)

[Purpose] Depending on the monitor used, the character flicker on the OSD may stand out.
If a system, such as character flicker, appears on the monitor, select the filter response.

[Tools to be used]



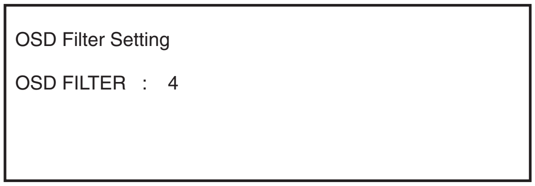
Remote control unit for servicing
(GGF1381)

[How to enter]
- While the User Operation screen is displayed, press the ESC then DISP keys, then the DIG/ANA key four times, in that order.
- While subscreen 3 of the first screen is displayed, press the DIG/ANA key.

[How to quit] Press the ESC key.

[Setting procedures]

① Display subscreen 4.
② Select the setting from the key operation table.



OSD Filter Setting

OSD FILTER : 4

Subscreen 4

[Tips]

As the setting value becomes greater, jitter is reduced on a CRT display. However, as lines for characters appear thick, complex characters may become difficult to read. On the contrary, as the setting value becomes smaller, jitter increases on a CRT display. However, as lines for characters become sharper, complex characters become more legible.

Note: Use the remote control unit for servicing.
Note: A new setting becomes active as soon as it is made. As a new setting is stored in nonvolatile memory, it will be retrieved when the unit it turned on the next time.
Note: After the factory-preset values are downloaded, the setting value for the OSD Filter will be the default value (4).

[(Table 2) Key operation of OSD Filter setting]

Key	Operation	Setting value	Remarks
[Rev x 3], [SPEED+] [x 3 Fwd], [SPEED-]	Changing the setting value for the OSD Filter	0 - 4 (Default value: 4)	[Rev x 3], [SPEED+] : The setting value increases by 1. [x 3 Fwd], [SPEED-] : The setting value decreases by 1.
[CLEAR]	The setting value is reset to default.	–	
[ESC]	To exit the OSD Filter Setting and clear the screen (Appears the tuner screen.)	–	–

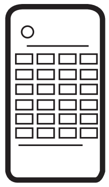
6.2 ATA/ATAPI DEBUG SCREEN (SECOND SCREEN)

[Purposes]

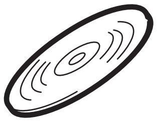
To be used as a rough guide to judge whether the pickup unit is all right or not

- Dirt on the pickup lens
- Degradation of the laser diodes for reading CDs and reading/writing to/from DVDs

[Tools to be used]



Remote control unit for servicing (GGF1381)



Aluminum-coated test disc (GGV1025)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 2 keys, in that order.
- While any subscreen of the second screen is displayed, press the DIG/ANA key repeatedly. The subscreens change cyclically.

[How to quit] Press the ESC key.

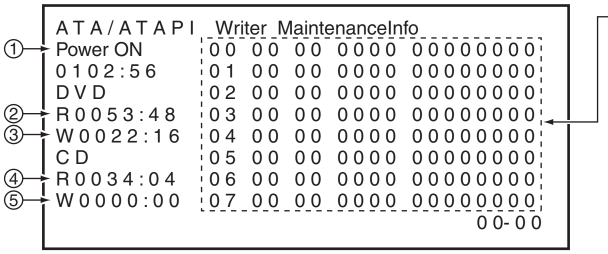
◆Writer Maintenance Information of ATA/ATAPI DEBUG OSD (Subscreen 3)

[How to enter]

- While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key twice, in that order.

[How to quit] Press the ESC key.

[Procedures] Update the display by pressing the SEARCH key while subscreen 3 is displayed.



```
ATA/ATAPI   Writer  MaintenanceInfo
Power ON    00 00 00 0000 00000000
0102:56     01 00 00 0000 00000000
DVD         02 00 00 0000 00000000
R0053:48    03 00 00 0000 00000000
W0022:16    04 00 00 0000 00000000
CD          05 00 00 0000 00000000
R0034:04    06 00 00 0000 00000000
W0000:00    07 00 00 0000 00000000
                             00-00
```

Error log for the Writer
(Not for Service)

① Power-on time/cumulative power-on time
② Duration of emission of the laser diode (LD) for DVD-R/DVD while reading
③ Duration of emission of the LD for DVD-W/DVD while writing
④ Duration of emission of the LD for CD-R/CD while reading
⑤ Duration of emission of the LD for CD-W/CD while writing (This function is not used for this model.)

② If the total hours of duration of emission of the laser diode (LD) for DVDs while reading ② and that of emission of the LD for DVDs while writing ③ exceed 4,700 hours, the LDs may be degraded. Perform an LD degradation judgment, using subscreen 4.

[Tips]

MTTF hours for each LD
DVD: 4,700 hours
CD: 11,000 hours

The ATA/ATAPI Writer Maintenance Info is obtained each time the power is turned on. Thereafter, the data on the subscreen is updated each time the SEARCH key is pressed (the updating command is sent) while this subscreen is displayed. Care must be taken when updating this subscreen, because an undesired command is inserted if it is executed while recording, etc.

[Note on lighting time data for each LD]

Since data on lighting time of each laser diode (LD) are stored in the flash ROM on the MAIN Assy, after the MAIN Assy is replaced, the data will be cleared. However, after the LOADER Assy is replaced, data on lighting time of each LD will be retained in the MAIN Assy. Therefore, before either the MAIN Assy or LOADER Assy is to be replaced, it is recommended that you write down the lighting time data.

◆ LD Degration Judgment of ATA/ATAPI DEBUG OSD (Subscreen 4)

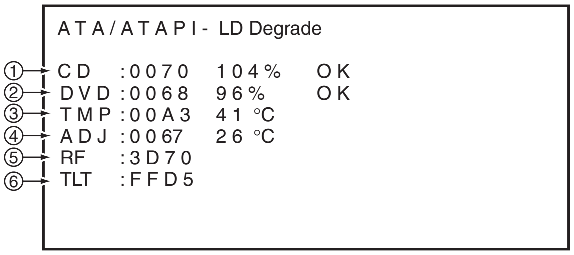
[How to enter] • While the User Operation screen is displayed, press the ESC, DISP then 2 keys, then the DIG/ANA key three times, in that order.

[How to quit] Press the ESC key.

[Notes]

- For correct measurement of items ① to ④ indicated in the display below, leave the unit at room temperature (25˚C) for a while before turning it on, and do not load a disc.
- For RF measurement (item ⑤), it is recommended to use the Test disc (GGV1025). As the RF level differs depending on the characteristics of the pickup from product to product, it cannot be used for judging degradation of the LD. Use the RF level as a rough guide to know the difference between before and after lens cleaning.

[Procedures] To update the value for each item, press the SEARCH key while subscreen 4 is displayed. For details on each item and the conditions of updating the values, see Table 2 below.



```
ATA/ATAPI- LD Degrade

CD  :0070  104%  OK
DVD :0068   96%  OK
TMP :00A3   41 °C
ADJ :0067   26 °C
RF  :3D70
TLT :FFD5
```

Table 2: Description of each item and conditions for updating data

No.	Item	Description	Conditions for updating by pressing the SEARCH key
①	CD	Degradation judgment of LD for CD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
②	DVD	Degradation judgment of LD for DVD. Regarded as NG when the value is 120% or higher (same standard as for the PC drive)	No disc inserted in the disc tray
③	TMP	Current temperature inside the Writer	No disc inserted in the disc tray
④	ADJ	Temperature (approx. 25°C) inside the Writer during adjustment	No disc inserted in the disc tray
⑤	RF	RF level (16-bit data, proportional calculation performed using the actual RF level value with 2.5 V = 0xFFFF as the maximum value, displayed in 4-digit hexadecimal)	During playback of disc medium (GGV1025)
⑥	TLT	Writer adjustment data for straight (non-HDD) model (FFFF is diplayed when the writer is not adjusted.)	No condition

If the results of degradation of the LDs for CDs or DVDs are NG, replace the drive.

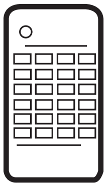
6.3 VR-RECORDING-RELATED ERROR LOGS (FOURTH SCREEN)

[Purposes]

To roughly determine in which category shown below a symptom that is difficult to reproduce belongs.
For details on the categories of error logs displayed, see "Table 1: Description of VR-recording-related errors."

- Errors related to the MPEG Encoder
- Errors related to the drive system
- Errors related to copying
- Errors related to others
- Errors related to the HDD

[Tool to be used]



Remote control unit for servicing
(GGF1381)

[How to enter]

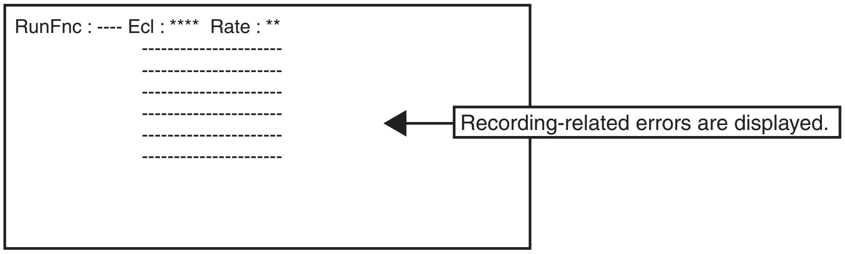
- While the User Operation display is displayed, press the ESC, DISP, then 4 keys, in that order.
- While any subscreen of the fourth screen is displayed, press the DIG/ANA key repeatedly.
  The subscreens change cyclically.

[How to quit] Press the ESC key.

[Description of each subscreen]

(1) VR-Recording-Related Error Logs (Subscreen 1)

- Errors related to recording are displayed on the lines "Rec Err:," as shown below.
  For details on errors, see "Table 1: Description of VR-recording-related errors."

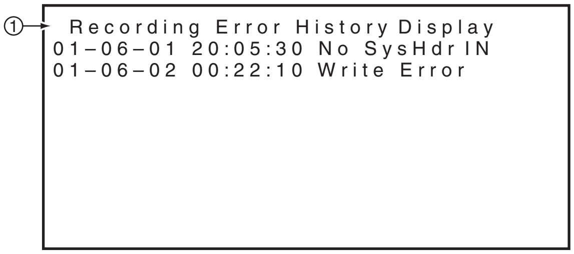


```
RunFnc : ---- Ecl : ****  Rate : **
                      ---------------------
                      ---------------------
                      ---------------------
                      ---------------------
                      ---------------------
                      ---------------------
```

Recording-related errors are displayed.

(2) Subscreen 2 and 3 (These subscreens are not for service use.)

(3) VR-Recording-Related Error Logs (Subscreen 4)



```
  Recording Error History Display
01-06-01 20:05:30 No SysHdr IN
01-06-02 00:22:10 Write Error
```

① There are two error-log screens, on which up to 9 logs per screen are displayed.
(generation time [year-month-day, hour:minute:second], error data in simplified description)

[Tips]

- The two error-log screens can be switched by pressing the SPEED+ or SPEED- key.
- For details on error messages, see Table 1 "Description of VR-recording-related errors".

(4) Subscreen 5 to 12 (These subscreens are not for service use.)

◆ Description of VR-Recording-Related Errors

Any error message marked with ∗ is displayed "RecErr : ---------" on the Subscreen 1 of the fourth screen.

● Error Related to MPEG Encoder

Error Message	Description	Cause
AVEnc Hang	AVEncoder failed	Defective engine or software-related problem
IN Encode ∗	Changes cannot be made in the process of encoding	
No SysHdr IN	System packet is not input periodically	Defective engine or software-related problem
Stm Start NG	Failure to start encoding (reasons not clear)	Defective engine or software-related problem
Stream NG	Inappropriate input stream data	Defective engine or software-related problem
Strm Start NG	Timeout waiting for system packet input at the beginning	Defective engine or software-related problem

● Error Related to Drive System

In a case of an error in the drive system, scratches or dirt on a disc, or a problem of the drive itself (dirty pickup) may be suspected.

Error Message	Description	Cause
Bdr Cls NG	Close Border failed	Defective disc
Bdr Opn NG	Open Border failed	Defective disc
BUF Overflow	Overflow of the Stream Buffer	Software-related problem
CLS Rzon Fail	Video Mode Close Rzone failure	Defective disc
Drive Hang	The Drive is hung up.	Defective disc or drive
Drv Err	General error of the drive	Defective disc or drive
Drv Hard Err	Abnormality in the drive hardware or firmware	Defective disc or drive
Drv TimeOut	Timeout waiting for drive operation	Defective disc or drive
Fail Repair	Repair failed	
Format NG	Format failed	Defective disc
May Be V mode	Although TMP_VMGI is not written, it may be Video Mode disc.	
Mech No Res	No response from the mechanical-control computer	Defective disc or drive
MKB Invalid	MKB reading error	Defective disc
NWA Exhaust	NWA surpassed and impossible to use	Defective disc
OPC NG	OPC failed	Defective disc
PCA Full	PCA has been used up.	
Read Err	Reading failed, ECC failed, etc.	Defective disc
ReadOnly DISC ∗	Because some data are invalid, data cannot be written	
RMA Full	RMA has been used up.	
Rzn Cls NG	Close RZone failed	Defective disc
Rzn Rpr NG	Repair RZone failed	Defective disc
Rzn Rsv NG	Reserve RZone failed	Defective disc
TMP-VMG WrErr	Video Mode TMP VMGI Write Error	Defective disc
VTSI_B Wr Err	Video Mode VTSI BUP Write Error	Defective disc
VTSI_B2 Wr Err	Video Mode VTSI BUP Write Error (After Layer Change)	Defective disc
VTSI Wr Err	Video Mode VTSI Write Error	Defective disc
VTSI2 Wr Err	Video Mode VTSI Write Error (After Layer Change)	Defective disc
Write Err	The Drive failed to write and could not be recovered.	Defective disc
May Be PVR	May be +VR disc, but no RSAT	
V Final fail	Abnormal process occurred when finalizing Video mode	Software-related problem
DLVR trace NG	Close Rzone failed at dual layer disc	Defective disc

RSAT : Reserved Space Allocation Table

● Error Related to Dubbing

Error Message	Description	Cause
H2D CP SomeNG	Other NG HDD →DVD copy	
Mem get NG	Video Mode Copy Memory has not ensured.	
Strm TransfNG	Video Mode Copy Stream Transfer NG	
Tracon Trn NG	Video Mode Copy Tracon transfer has not been completed.	
VC Cell Max	Maximum number for Video Mode copy Cells exceeded	
VC CopyCancel	Video Mode Copy Copy Cancel	
VC FlushC NG	Video Mode Copy Flush Cache NG	
VC HDD C Err	Obtaining Video Mode Copy HDD Cell information failed	
VC HDD Inf NG	No information on Video Mode Copy HDD	
VC HDD Info NG	Format failed	
VC Idling NG	Video Mode Copy idling NG	
VC Pck Anl NG	Analizing Video Mode Copy Pack failed	

● Error Related to Dubbing (Continued)

Error Message	Description	Cause
VC Transf Stp	Video Mode Copy Transfer Stop	
VC TSO BLK NG	Video Mode Copy TSO Block transfer has not been completed.	
VC VOBU SizeE	Video Mode Copy VOBU Size NG	
V Rsv RzoneNG	Video Mode Copy Reserve Rzone failed	Defective disc
V2H APP FL NG	VR → HDD APP FLG is OFF	
V2H Aud Ch NG	VR →HDD Audio Channel NG	
V2H Aud Md NG	VR →HDD Audio Mode NG	
V2H Aud Stm N	VR →HDD Audio Stream number NG	
V2H SRC Prot	VR →HDD copy prohibited material	
V2H Unknown	VR →HDD other NG	
V2H VOBU TMNG	VR →HDD Play back time of each VOBU is different	
V2H V Reso NG	VR →HDD Video resolution NG	
H2D CP NoSpac	HDD →DVD insufficient free space for copy	
H2D TO HDDRD	HDD →DVD (VR) TimeOut at HDD playing side	
H2D TO SPRO	HDD →DVD (VR) TimeOut at internal processing	
H2D TO DVDWR	HDD →DVD (VR) TimeOut at HDD recording side	

● Other Errors

Error Message	Description	Cause
Abort *	Cancellation	
Already open	Extension file is already opened.	
BK BATT Down	Backup RAM data has been erased.	
BK FSYS Dirty	Backup RAM data has not been written on the File Sys.	
BUG	Some bugs	
BusReset Done	Bus Reset has been executed.	
Cell Close NG	Cell Close NG	
CPRM IC NG	Inappropriate CPRM IC	Defective engine
Dir Depth Err	Tree of Directory is too deep.	
Disc Full	No further data can be written because the disc is full.	
DRAM CLR Err	Video Mode DRAM (Stream Buffer) Clear failure	
DRAM NG	Abnormality in access to the Work DRAM	
Drive Destroy	The drive has crashed.	Defective engine, drive, or HDD
EncModul Hang	Encoder routine is hung up.	Defective engine or software-related problem
F Alrdy Exst	Extension file is already exist.	
File cancel	Extension file is canceled.	
FileNot Exist	Extension file is not exist.	
Format Excec	Formatting has been executed.	
Invalid Disc *	The disc cannot be recognized.	Problem in the logical structure of the disc
Invalid Param *	Invalid parameter	
Invalid TMVMG	Invalid TMP_VMGI content	Problem in the logical structure of the disc
Invalid UDF *	Invalid UDF content	Problem in the logical structure of the disc
Invalid VMG *	Invalid VMG content	Problem in the logical structure of the disc
Invalid VTSI	VTSI information of +VR is unusual.	Problem in the logical structure of the disc
Irr Action *	Incorrect action	
MKB REVOKED	Error in gaining data	
Limit Over *	Standard maximum limit exceeded	
No More Info *	No more space in the internal work-management area	Software-related problem
No Permission *	No permission to write to the disc	
No Video	No video input (not locked)	
Now Busy *	In the process of the emergency processing	
NV Pck DMA Er	Inappropriate NaviPack DMA	
NV Pck MK Err	Error in creating NaviPack	
Ourob Strm NG	Inappropriate stream data to the Ouroboros input	
Over Heat	Abnormal temperatute	
PARAM NO ACCP	Recording parameter is not matched.	
Process Over	Process is overfull.	
Protect Src *	Source to be recorded is copy-protected.	
Rec Pause *	No operation permitted during recording pause	
Relocation Do	VR-recording data was relocated	

● Other Errors (continued)

Error Message	Description	Cause
Repair Excec	Repairing has been executed.	
Something *	Undetermined error	
SRAM NG	Abnormality in access to the backup work SRAM	
Status NG *	Abnormality in change of statuses	
SW PVR	Switch to +VR playback process	
SW Vpb mode *	Switching to video playback routine is required.	
SW Vrec mode *	Switching to video recording routine is required.	
Unmatch Stamp *	Impossible to modify because of nonmatching time stamp	Problem in the logical structure of the disc
VBR-SRAM NG	Abnormality in VBR SRAM	
V Categ ID NG	Inappropriate Category ID	
V Cate Inf NG	Inappropriate Category information	
V Ext MAX Ovr	Count Max exceeded	
V ExtToo Big	The extension file is too large.	
V Ext TY NG	Type NG	
Virgin DISC	Virgin Disc	
VOBU Info NG	Inappropriate VOBU information	
WaterMark Det	Watermark detected	
WM Cracked	WM Cracked	
Param Short	Editing Error (Clear A-B)	
Invalid VRMI	Information of +VR is NG. (VRMI)	Problem in the logical structure of the disc

● Error Related to HDD

Error Message	Description	Cause
Do nothing	Do nothing for demand.	
ESFSYS CORUPT	easyfsys error	
ESFSYS INIT	easyfsys initializing	
HDD Buff High	High-level process executed for the HDD Buffer	
HDD DEF DONE	HDD deflag finished	
HDD DEF ERR	HDD deflag error	
HDD Destroy	HDD is not recognized on the bus.	Defective HDD, engine
HDD INFO BAD	Incorrect HDD Management Data	Defective HDD or software-related problem
HDD Initialize	HDD initialized	
HDD IRRG POFF	Abnormal power off	
HDD MBR NG	Inconsistent MBR data	Defective HDD
HDDReset Done	HDD Reset executed	
HDD ROMSUM NG	Rom-code check sum NG	
HDD SIG NG	Inconsistent HDD Management Data Magic	Defective HDD
HDD SMART NG	Inappropriate HDD SMART	Defective HDD
HDD Trans Err	DMA error in HDD copy transfer	
HDD unauthor	Inconsistent HDD serial No.	
HDD Zero WR	MBR was written	
Task No Activ	Task has not been activated.	
TT Rec Over	Title recording time full	
HDD WRONG TGT	Invalid HDD target No. is directed.	
extHDD Ignore	External HDD is dismounted.	
HDD PFile NG	Program file installed in HDD is NG.	
HDD DEL TT	Delete the title by HDD recovery.	
HDD DEL PL	Delete the dubbing list by HDD recovery.	
HDD DEL OC TT	Delete the title moving on the way inside HDD	

● No Error

Error Message	Description	
Non Err *	Normal	

Abbreviations:

ECC = 4 byte Code for Error Correction
UDF = Universal Disc Format
PCA = Power Calibration Area
OPC = Optical Power Control
NWA = Next Writable Address

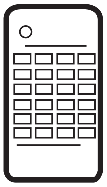
VMG = Video Manager
RMA = Recording Management Area
MKB = Media Key Block
TMP_VMGI = Temporary Video Manager Information
Border = from Lead-in to Lead-out
RSAT = Reserved Space Allocation Table

6.4 VR-PLAYBACK-RELATED ERROR LOGS (FIFTH SCREEN)

[Purposes]

It can be inferred that an operation that caused an error in the drive was performed or that a failure occurred in the drive if any of the error logs shown in "Table 2: Description of VR-playback-related errors" is recorded on this screen.

[Tool to be used]



Remote control unit for servicing
(GGF1381)

[How to enter]

- While the User Operation display is displayed, press the ESC, DISP, then 5 keys, in that order.
- While any subscreen of the fifth screen is displayed, press the DIG/ANA key repeatedly. The subscreens change cyclically.

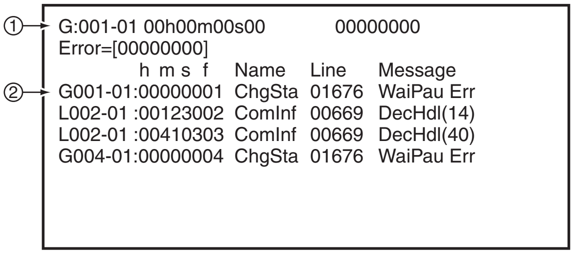
[How to quit] Press the ESC key.

[Description of each subscreen]

(1) Subscreen 1 (This subscreen is not for service use.)

(2) VR-Playback Error Logs (Subscreen 2)

- For details on error messages, see Table 2 "Description of VR-playback-related errors".
- If a VR-playback-related error is generated, a problem in data reading from the disc may be suspected. (The possibility of a problem on the drive side is high.)



```
G:001-01 00h00m00s00          00000000
Error=[00000000]
             h m s  f   Name    Line    Message
G001-01:00000001  ChgSta  01676   WaiPau Err
L002-01 :00123002 ComInf  00669   DecHdl(14)
L002-01 :00410303 ComInf  00669   DecHdl(40)
G004-01:00000004  ChgSta  01676   WaiPau Err
```

① Information on display position
Original / Play list (G/L), Title No., Chapter No. [X:XXX-XX]
Display time (hour, minute, second & frame) [XXhXXmXXsXX]
Logic address for playback (ID) [XXXXXXXX]
Number of entries to error log [XXXXXXXX]

② Error message log
Original / Play list (G/L), Title No., Time of occurrence (min & sec) [XXX:XXXX]
Location of occurrence (this data is used for development), Name: Name of module where the error occurred, Line: Number of line where error occurred
Playback-system errors that occurred in 13 times of playback in past [XXX:XXXXXXX]
* For details of error information, refer to the Appendix Table 1.
* If information on errors which occurred on days earlier than the current day is contained on the screen, the information that follows the information which are displayed with "^" between “Time of occurrence”, “Name”, “Line” and “Message” indicates the errors that occurred on the current day.

◆ Description of VR-Playback-Related Errors

Error Message	Details of error
AudioPB Err	Audio initialization error
WaiPau Err	Pause was disabled though tried. (Pause-wait timeout)
CC_OS_ERR	CC output processing error
Tr:NullBlk	No valid data in the first block
Tr:NaviErr	Navigation pack error
Tr:ReadErr	Data read error
Dec:PicDisp	Not played up to final PTS
Dec:Size	horizontal/vertical_size in sequence header is 0 or above 720 × 576.
Dec:PicTyp	picture_coding_type in picture header is neither of the I, P, nor B picture type.
Dec:Struct	picture_structure in picture coding extension is neither top/bottom_field or frame picture.
Dec:Syntax	Header size is insufficient or does not match with markerbit.
Dec:NoHead	No picture header exists between picture data.
Dec:SqErr	Detected sequence_error_code.
Dec:Refrenc	In Field structure, top_field and bottom_field of temporal_reference in picture header does not match.
Dec:Profile	profile_and_level_indication in sequence extension header is exceeding MP@ML.
DecHdl(**)	Decoder command execution timeout. (**) is replaced by No. of command which was to be executed. The Nos. and names of commands are as follows. /* DECODER system command */ 0 HANDLER_DECODER_INIT, 1 HANDLER_DECODER_INIT_STARTUP, 2 HANDLER_DECODER_INIT_PLAY, 3 HANDLER_DECODER_INIT_RTR_PLAY, 4 HANDLER_DECODER_INIT_AUDIO, 5 HANDLER_DECODER_EXIT, 6 HANDLER_DECODER_BLACK_BACK, 7 HANDLER_DECODER_SET_DISP_FMT, 8 HANDLER_DECODER_SET_ASPECT_MODE, 9 HANDLER_DECODER_DISP_BITRATE, /* DVD command */ 10 HANDLER_DEC_DVD_VIDEO_PLAY, 11 HANDLER_DEC_DVD_VIDEO_PLAY_LIST, 12 HANDLER_DEC_DVD_AUDIO_PLAY, 13 HANDLER_DEC_DVD_STOP, 14 HANDLER_DEC_DVD_PAUSE, 15 HANDLER_DEC_DVD_PAUSE_STILL_MODE, 16 HANDLER_DEC_DVD_STEP, 17 HANDLER_DEC_DVD_REWSTEP, 18 HANDLER_DEC_DVD_PAUSE_OFF, 19 HANDLER_DEC_DVD_FF, 20 HANDLER_DEC_DVD_REW, 21 HANDLER_DEC_DVD_SLOW, 22 HANDLER_DEC_DVD_REWSLOW, 23 HANDLER_DEC_DVD_SCAN_OFF, 24 HANDLER_DEC_DVD_SLOW_OFF, 25 HANDLER_DEC_DVD_REWSLOW_OFF, 26 HANDLER_DEC_DVD_REWSKIP_TO_REWSLOW, 27 HANDLER_DEC_DVD_REWPAUSE, 28 HANDLER_DEC_DVD_PLAY_LIST_END_CHECK, 29 HANDLER_DEC_DVD_SET_CAPTION_SW_OFF, 30 HANDLER_DEC_DVD_SET_CAPTION_SW_ON, 31 HANDLER_DEC_DVD_REWPAUSE_TO_REWSLOW,

Error Message	Details of error
	32 HANDLER_DEC_DVD_REGIST_TRICK_CALLBACK, 33 HANDLER_DEC_DVD_TRICK_DATA_END, 34 HANDLER_DEC_DVD_AUDIO_STOP, /* management information */ 35 HANDLER_DEC_INIT_NV_PCK, 36 HANDLER_DEC_INIT_RDI_PCK, 37 HANDLER_DEC_READ_NV_PCK_POINT, 38 HANDLER_DEC_READ_RDI_PCK_POINT, 39 HANDLER_DEC_READ_STC, 40 HANDLER_DEC_READ_PTS, 41 HANDLER_DEC_HLI_ENABLE, 42 HANDLER_DEC_COMMAND_PLAY, 43 HANDLER_DEC_COMMAND_PAUSE, 44 HANDLER_DEC_COMMAND_RSLOW_VOBU_STOP, 45 HANDLER_DEC_INIT_VIDEO_MODE, 46 HANDLER_DEC_SET_VIDEO_MODE, 47 HANDLER_DEC_CHECK_VIDEO_OUTPUT, 48 HANDLER_DEC_CHECK_VIDEO_ERROR, 49 HANDLER_DEC_DISPLAY_SUBPICTURE, 50 HANDLER_DEC_SET_SUBPICTURE_PALLET, 51 HANDLER_DEC_IPB_REVERSE, 52 HANDLER_DEC_SET_AUDIO_SYNC, 53 HANDLER_DEC_COMPULSION_OUTPUT_SUBPICTURE, 54 HANDLER_DEC_CLEAR_LAST_NV_PCK_POINT, 55 HANDLER_DEC_CLEAR_LAST_RDI_PCK_POINT, 56 HANDLER_DEC_GET_PICTURE_PARAM, 57 HANDLER_DEC_CHECK_BUFFER_EMPTY, 58 HANDLER_DEC_CHECK_TRICK_END, 59 HANDLER_DEC_READ_VCD_PTS, /* still picture */ 60 HANDLER_DEC_DVD_STILL_NOTIFY, 61 HANDLER_DEC_DVD_STILL_PLAY, 62 HANDLER_DEC_DVD_STILL_FF, 63 HANDLER_DEC_DVD_STILL_FF_OFF, 64 HANDLER_DEC_DVD_STILL_SLOW, 65 HANDLER_DEC_DVD_STILL_SLOW_OFF, 66 HANDLER_DEC_DVD_STILL_PAUSE, 67 HANDLER_DEC_DVD_STILL_PAUSE_OFF, 68 HANDLER_DEC_DVD_STILL_DATA, 69 HANDLER_DEC_DVD_STILL_GET_COUNT, 70 HANDLER_DEC_DVD_RDI_NOTIFY, /* closed caption */ 71 HANDLER_DEC_CAPTION_NOTIFY, 72 HANDLER_DEC_CAPTION_BUFFER_RESET, 73 HANDLER_DEC_CAPTION_SET_INPUT_USER_DATA, 74 HANDLER_DEC_CAPTION_SET_INPUT_FRAME_DATA, 75 HANDLER_DEC_CAPTION_SEND_FRAME_DATA, 76 HANDLER_DEC_FRAME_CHANGE_NOTIFY

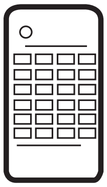
6.5 DV SERVICE MODE

◆ DV Debug

[Purpose]

To check whether communication between a DV device and the unit is normal when a DV device is connected

[Tools to be used]



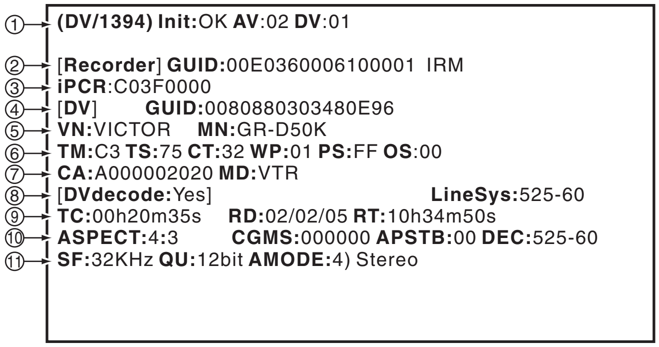
Remote control unit for servicing
(GGF1381)

- DV device
- DV cable

[How to enter] Press the ESC , DISP then 3 keys, in that order.

[How to quit] Press the ESC key.

[Mode description]



```
①→ (DV/1394) Init:OK AV:02 DV:01

②→ [Recorder] GUID:00E0360006100001  IRM
③→ iPCR:C03F0000
④→ [DV]       GUID:0080880303480E96
⑤→ VN:VICTOR    MN:GR-D50K
⑥→ TM:C3 TS:75 CT:32 WP:01 PS:FF OS:00
⑦→ CA:A000002020 MD:VTR
⑧→ [DVdecode:Yes]                      LineSys:525-60
⑨→ TC:00h20m35s    RD:02/02/05 RT:10h34m50s
⑩→ ASPECT:4:3      CGMS:000000 APSTB:00 DEC:525-60
⑪→ SF:32KHz QU:12bit AMODE:4) Stereo
```

Boldface alphanumerics : Fixed indications
Nonboldface alphanumerics : Variable indications

No.	Item	Description	Remarks
①	Init	Whether the initialization of 1394 LINK and DV decoder inside EMMA2RFEX has been completed (OK) or not (NG)	
	AV	Number of AV devices recognizing connection	Identification number of AV devices including D-VHS, Digital Tuner, etc other than DV devices.
	DV	Number of DV devices recognizing connection	If the number does not become 01 even if a DV device is connected, identification of that device fails.
②	GUID	GUID set in ConfigROM of the unit	GUID : Global Unique ID (Specific ID for DV devices) If the unit is ROOT (IRM), IRM is displayed at the side position of GUID display.
③	iPCR	iPCR value of the unit	
④	GUID	GUID set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. If the connected DV device is ROOT (IRM), IRM is displayed at the side position of GUID display.
⑤	VN	Vendor name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the vendor name may not be set in ConfigROM.)
	MN	Model name set in ConfigROM of the connected DV device	Data are displayed only if one DV device is identified. (Depending on the device, the model name may not be set in ConfigROM.)

No.	Item	Description	Remarks
⑥	TM	Transport Mode data obtained from the DV device	Data are displayed only if one DV device is identified.
	TS	Transport State data obtained from the DV device	
	CT	Cassette Type data obtained from the DV device	
	WP	Write-protection data obtained from the DV device	
	PS	Power-state data obtained from the DV device	
	OS	Output signal mode data obtained from the DV device	
⑦	CA	Connect AV data obtained from the DV device	Data are displayed only if one DV device is identified.
	MD	DV device mode	Camera or VTR is displayed only if one DV device is identified.
⑧	[DVdecode:XXX]	Whether Yes (in the process of requesting DV input) or No is indicated in XXX	Normally, Yes is indicated only when CH is set to DV.
	LineSys	Input Line System setting	
⑨	TC	Time-code data of the DVdecode Stream, or response data of the Time Code command	Stream time-code data are obtained when the tape is played in forward direction. Otherwise, time-code data are obtained through an AV/C command.
	RD	Rec Date of DVdecode Stream	
	RT	Rec Time of DVdecode Stream	
⑩	ASPECT	Aspect Ratio of DVdecode Stream	
	CGMS	CGMS of DVdecode Stream (from left to right, CGMS data of bits 5-4: Audio ch 2, bits 3-2: Audio ch 1, and bits 1-0: Video)	*CGMS (Copy Generation Management System): The two-digit codes added to broadcast programs represent the following: 00: Copy freely, 10: Once copy, 11: Never copy
	APSTB	APS trigger bit of DVdecode stream	
	DEC	With/without DVdecode stream input	With input: Signal type (525-60, 625-50, 1125-60, 1250-50, or Invalid) is indicated, Without input: "No" is indicated.
⑪	SF	Sampling Frequency of DVdecode Stream	If SF is 44 kHz, it is considered that 44.1-kHz audio is input, and sound is muted on the unit.
	QU	QUANTIZATION of DVdecode Stream	
	AMODE	AUDIO MODE of DVdecode Stream	

◆ Simple Diagnosis of DV

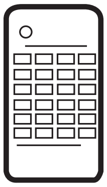
Symptoms		Location in the Debug Screen	Items to be Checked, and Conditions	Possible causes
No operation for DV input	1	DV ①	Check the Init indication: OK: Initialization of 1394 LINK and DV decoder inside EMMA2RFEX appropriately completed. NG: Initialization of 1394 LINK and DV decoder inside EMMA2RFEX has not been completed properly.	Defective IC1001(EMMA2RFEX)/ IC5103(1394PHY), improper connection between IC1001 / IC5103, defective soldering, defective power supply, etc.
	2	DV ①	Check the number of DV devices when one DV device is connected to the recorder: 01 : The connected DV device is correctly identified. Other than 01 : The connected DV device is not correctly identified.	Defective DV terminals, improper connection of the DV-terminal board, defective IC5103(1394PHY), defective cables, an IEEE 1394 device other than the DV device connected.
No picture nor sound for DV input	1	DV ⑧	Check of DV decoding when the recorder channel is set to DV: Yes: The recorder is in the process of a DV input operation No: The recorder is not executing a DV input operation	Defective IC1001(EMMA2RFEX), defective soldering, defective power supply, etc.
	2	DV ⑩	Check DEC: 525-60: An NTSC DV signal is input from the DV device. 625-50: A PAL DV signal is input from the DV device. No: No DV signal is input from the DV device.	Defective DV terminals, improper connection of the DV-terminal board, defective source device defective IC1001(EMMA2RFEX), IC5103(1394PHY) **Note:** As to a model having the Input Line System setting, if the setting and the actual input signal system do not match, no picture appears.
DV input recording impossible	1	DV ⑩	Check CGMS:	Recording cannot be performed for a copy-protected source.
No sound for DV input	1	DV ⑪	Check SF: 32 khz: An audio signal with 32-kHz sampling frequency is being input. 48 khz: An audio signal with 48-kHz sampling frequency is being input. 44 khz: An audio signal with 44.1-kHz sampling frequency is being input.	An audio signal with 44.1-kHz sampling frequency is muted.

6.6 HDMI SERVICE MODE

[Purposes]

To check the statuses of the connected HDMI devices.

[Tool to be used]



Remote control unit for servicing
(GGF1381)

- HDMI device
- HDMI cable

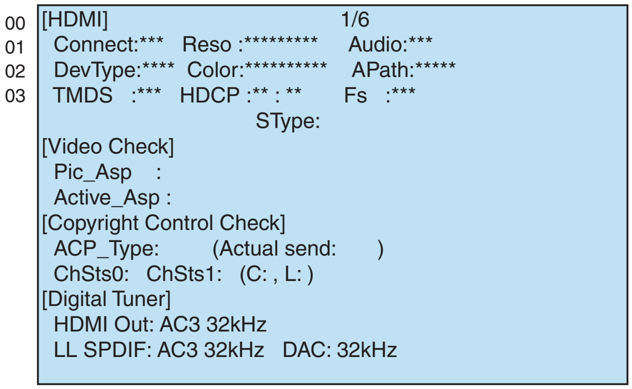
[How to enter] • Press the ESC, DISP then +10, +10 , 4 keys, in that order.

Note: Do not press any key on the remote control unit supplied with the unit or for servicing while the HDMI debug screen is displayed.

[How to quit] Press the ESC key.

[Description of the mode]

1. HDMI MAIN information screen (First screen)



```
00  [HDMI]                                1/6
01    Connect:***   Reso :*********     Audio:***
02    DevType:****  Color:**********    APath:*****
03    TMDS   :***   HDCP :** : **       Fs   :***
                                 SType:
    [Video Check]
      Pic_Asp    :
      Active_Asp :
    [Copyright Control Check]
      ACP_Type:        (Actual send:      )
      ChSts0:   ChSts1:   (C: , L: )
    [Digital Tuner]
      HDMI Out: AC3 32kHz
      LL SPDIF: AC3 32kHz   DAC: 32kHz
```

(*1) [Tips]
Because all the data on connection and authentication are canceled once the function of the connected HDMI device is set to a position other than HDMI, all the debugging data in Table 1 are deleted.

Table 1: Description of the items on the HDMI main information screen

Line	Item	Description	Remark
1	Connect	Connection status of the HDMI device	See Table 2.
	Reso	Output resolution	See Table 3.
	Audio	HDMI audio output status	See Table 4.
2	DevType	Type of connected device	See Table 5.
	Color	Output color	See Table 6.
3	TMDS	TMDS (video stream) signal output status	See Table 7.
	HDCP	HDCP Authentication status	See Table 8.
	Fs	Output audio Fs	See Table 9.

Table 2: Connection status of the HDMI device

Indication	Description
ON	Connected
HtPlg	Not connected but Hot plug is ON.
OFF	Not connected

Table 3: Output resolution

Indication	Description
480i NTSC	720x480i NTSC
480p NTSC	720x480p NTSC
720p NTSC	1280x720p NTSC
1080i NTSC	1920x1080i NTSC
1080p NTSC	1920x1080p NTSC
576i PAL	720x576i PAL
576p PAL	720x576p PAL
720p PAL	1280x720p PAL
1080i PAL	1920x1080i PAL
1080p PAL	1920x1080p PAL
----------	TMDS Off

[Description of the Main screen] (Continued)

Table 4: HDMI audio output status

Indication	Description
OFF	Output: Off
ON	Output: On

When the unit is connected to DVI device (refer to Table 5), the Audio is not outputted.

Table 5: Type of the connected device

Indication	Description
------	Not connected
HDMI	It has been confirmed that an HDMI device supporting HDCP is connected.
DVI	It has been confirmed that a DVI device supporting HDCP is connected.

When the unit is connected to device with no HDCP support, this display is "HDMI-" or "DVI-".

Table 6: Output color

Indication	Description
YCbCr4:2:2	Component 12 bits (YCbCr4:2:2)
YCbCr4:4:4	Component (YCbCr4:4:4)
RGB(0-255)	RGB full range (0-255)
RGB(16-235)	RGB (16-235)
RGBFULL DC10	RGB full range (0-255) Deep Color 30 bits
RGBFULL DC12	RGB full range (0-255) Deep Color 36 bits
RGBLIM DC10	RGB (16-235) Deep Color 30 bits
RGBLIM DC12	RGB (16-235) Deep Color 36 bits
YC4:4:4 DC10	Component (YCbCr4:4:4) Deep Color 30 bits
YC4:4:4 DC12	Component (YCbCr4:4:4) Deep Color 36 bits
-----------	TMDS Off

Table 7: TMDS signal output status

Indication	Description
OFF	Output: Off
ON	Output: On

Table 8: HDCP

Left side : HDCP Authentication Status

Indication	Description
--	If an device supporting HDCP is connected, HDCP authentication is in progress.
OK	HDCP authentication succeeded.

Refer to this item only when HDMI or DVI is displayed for the item for the type of the connected device (Table 5).
If OK is not displayed although HDMI or DVI is displayed, it means that the HDCP authentication failed.

Right side : Check Revocation list

Indication	Description
--	Checking that the connected device (all downstream devices) is not registered to the Revocation list, or so.
OK	The connected device (all downstream devices) is not registered to the Revocation list.

Refer to this item only when HDMI or DVI is displayed for the item for the type of the connected device (Table 5).
When there is also no valid SRM (include Revocation list), "--" is displayed here.

Table 9: Fs

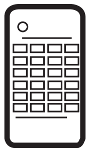
Indication	Description
32k	32kHz
44k	44.1kHz
48k	48kHz
96k	96kHz
96k/2	48kHz (original data of 96kHz is down-sampled.)
---	Audio Off

6.7 AGING MODE

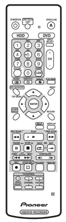
[Purposes]

If symptoms regarding recording/playback of discs and/or the HDD that your customer claimed are difficult to reproduce, they can be reproduced with a long-time test in Aging mode.

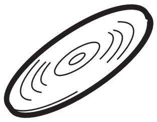
[Tools to be used]



Remote control unit
for servicing
(GGF1381)



Remote control unit
supplied with the unit
(VXX3267)



Commercially available,
recordable DVD-R/+R
and DVD-RW/+RW/
-RAM discs

[Notes]

- When aging for the DVD-RW/+RW/-RAM and HDD is executed, all recorded data on them will be erased.
- Commands from the remote control unit are accepted during Aging mode.
- If Aging mode is quit using the ESC key, indications on the FL display will return to normal display.
- Cancel timer settings before entering Aging mode.
- Set the recording rate beforehand. It cannot be changed during Aging mode.

[How to enter]

① Press the DVD key to switch to DVD.
② Load a recordable disc.
③ Select the input function of a recordable source.
④ After disc detection is performed, press the ESC then REP.B, and then PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.

(aging for ±RW/-RAM only)

- If during initialization: The unit stops after initialization is finished. ←
- If the tray is being opened/closed: The unit stops after the tray is opened/closed. ←

[Description of operation] **Aging for the DVD-RW/DVD-R**

Aging for the DVD-RW/+RW/-RAM	Aging for the DVD-R/+R
During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Initialization ④ Recording for 60 minutes ⑤ Playback for 45 minutes <DVD-RW> The initialization process in step 3 follows the setting specified in "Disc setting--Basic--Auto initialization of a DVD-RW." <DVD+RW> The initialization process in step 3 is the same as that described in "Disc setting--Initialization--Initialization of a DVD+RW." <DVD-RAM> In the initialization process in step 3, physical formatting is performed, if required. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD.	During Aging mode, the following operations are repeated in the order shown below. ① The tray opens. ② The tray closes. ③ Recording for 1 minute ④ Recording pause for 6 minutes ⑤ Recording stops. ⑥ Playback for 1 minute ⑦ Playback pause for 6 minutes ⑧ Playback stops. **Note:** A continuous test of the above operations is possible for approximately 23 hours. After ② the tray closes, disc detection is performed, <DVD-R> In step 2, if the disc is judged to have recorded up to 99 titles, the operation stops at that point. <DVD+R> If the disc is judged to have recorded up to 49 titles, the operation stops at that point. On the FL display, the number of loops is retained. On the OSD display, the error indication is retained. During Aging, the number of loops is indicated on the FL display, as shown below. [AGING 0001] If an error is generated, the aging operation stops. **Note:** Indications on the FL display are retained, and this information is also retained as an OSD. **Note:** Recording time depends on the recording rate set. For example, if the recording rate is MN32, only up to 60 titles can be registered. Check the setting for recording rate before performing aging.

[Aging for the HDD]

[How to enter]

① Press the HDD key to switch to HDD.
② Press the ESC key then the REP.B, and then the PLAY keys on the remote control unit for servicing to enter Aging mode.

[How to quit]

Press the ESC key on the remote control unit for servicing to quit Aging mode and return to Normal mode.

Notes:

- If during recording: Recording is stopped.
- If during playback: Playback is paused.
- If during erasure of all memory data from the HDD, the unit stops after all memory data have been erased.

[Description of operation]

During Aging mode, the following operations are repeated in the order shown below.
① Erasure of all the memory data from the HDD
② Recording for 60 minutes
③ Playback for 60 minutes

* Take caution as all recorded data of the HDD is deleted.

[Tips]

During Aging, the number of loops is indicated on the FL display, as shown below.
[AGING 0001]

If an error is generated, the aging operation stops.

Note:

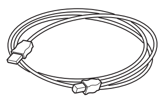
Indications on the FL display are retained, and this information is also retained as an OSD.

6.8 USB CHECK MODE

[Purposes]

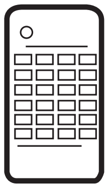
As this unit is provided with two USB ports, operation checks of these ports are possible by connecting them (loop connection).

[Tools to be used]



USB cable
(GGD1445)

Remote control unit
supplied with the unit
(VXX3267)



Remote control unit for servicing
(GGF1381)

[How to enter this mode]

1. Connect Connector A (at the front panel) and Connector B (at the front panel), using a USB cable.
2. Enter USB Check mode.
   Press the ESC key on the remote control unit for servicing then press the TIMER REC key on the remote control unit supplied with this unit.

[How to quit]

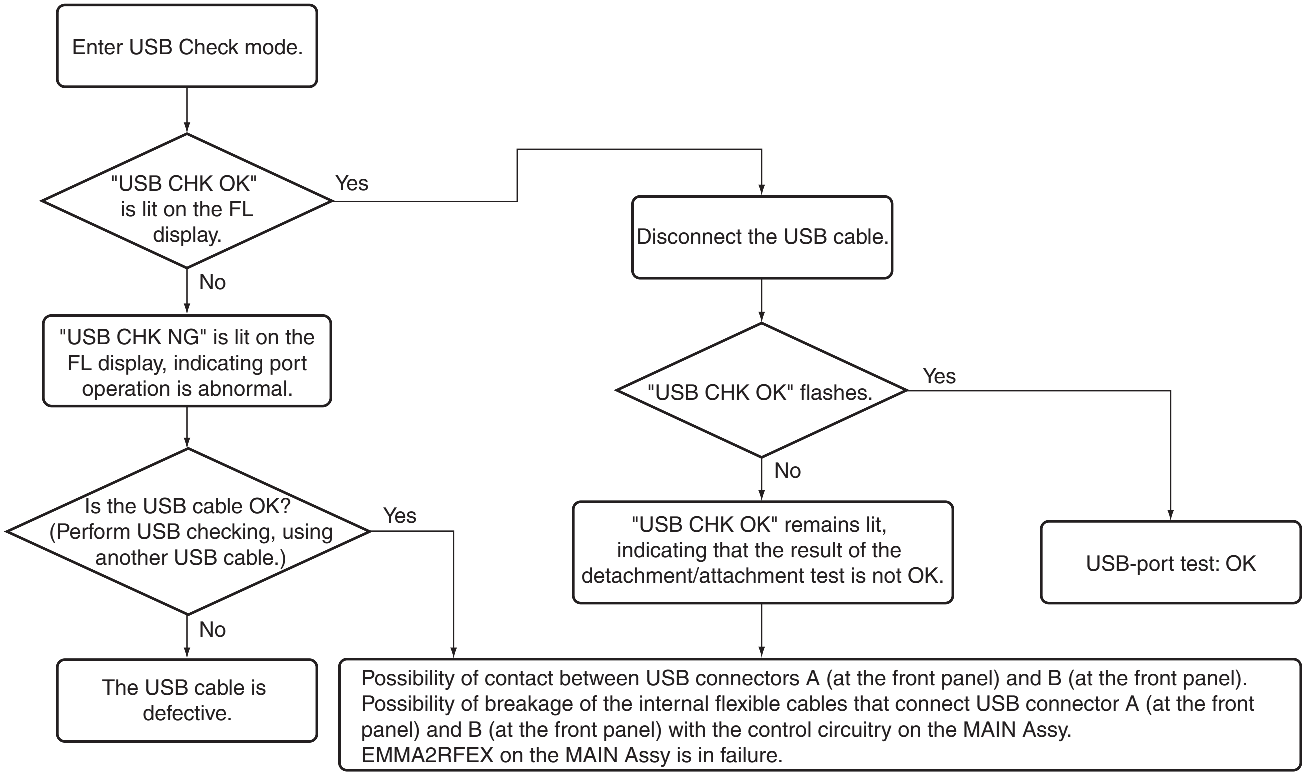
To quit while the ports are operating properly ("USB CHK OK" is lit.): Press the ESC key or the clear key.
To quit while port operation is abnormal: Turn the power off then back on.

[Procedures]

1. Check the indication on the FL display.
   When the two ports are operating properly: "USB CHK OK" is lit.
   When port operation is abnormal: "USB CHK NG" is lit.

2. When "USB CHK OK" is lit in Step 1, disconnect the USB cable in order to perform the detachment/attachment test.
   The indication on the FL display will change, as follows:
   If the result is OK: "USB CHK OK" will flash.
   If the result is not OK: "USB CHK OK" will remain lit.

[Troubleshooting]


Enter USB Check mode.
"USB CHK OK" is lit on the FL display.
Yes
No
"USB CHK NG" is lit on the FL display, indicating port operation is abnormal.
Is the USB cable OK? (Perform USB checking, using another USB cable.)
Yes
No
The USB cable is defective.
Disconnect the USB cable.
"USB CHK OK" flashes.
Yes
No
"USB CHK OK" remains lit, indicating that the result of the detachment/attachment test is not OK.
USB-port test: OK
Possibility of contact between USB connectors A (at the front panel) and B (at the front panel).
Possibility of breakage of the internal flexible cables that connect USB connector A (at the front panel) and B (at the front panel) with the control circuitry on the MAIN Assy.
EMMA2RFEX on the MAIN Assy is in failure.

6.9 HDD CHECK MODE

◆ How to Diagnose Failure of the Hard Disc Drive (HDD)

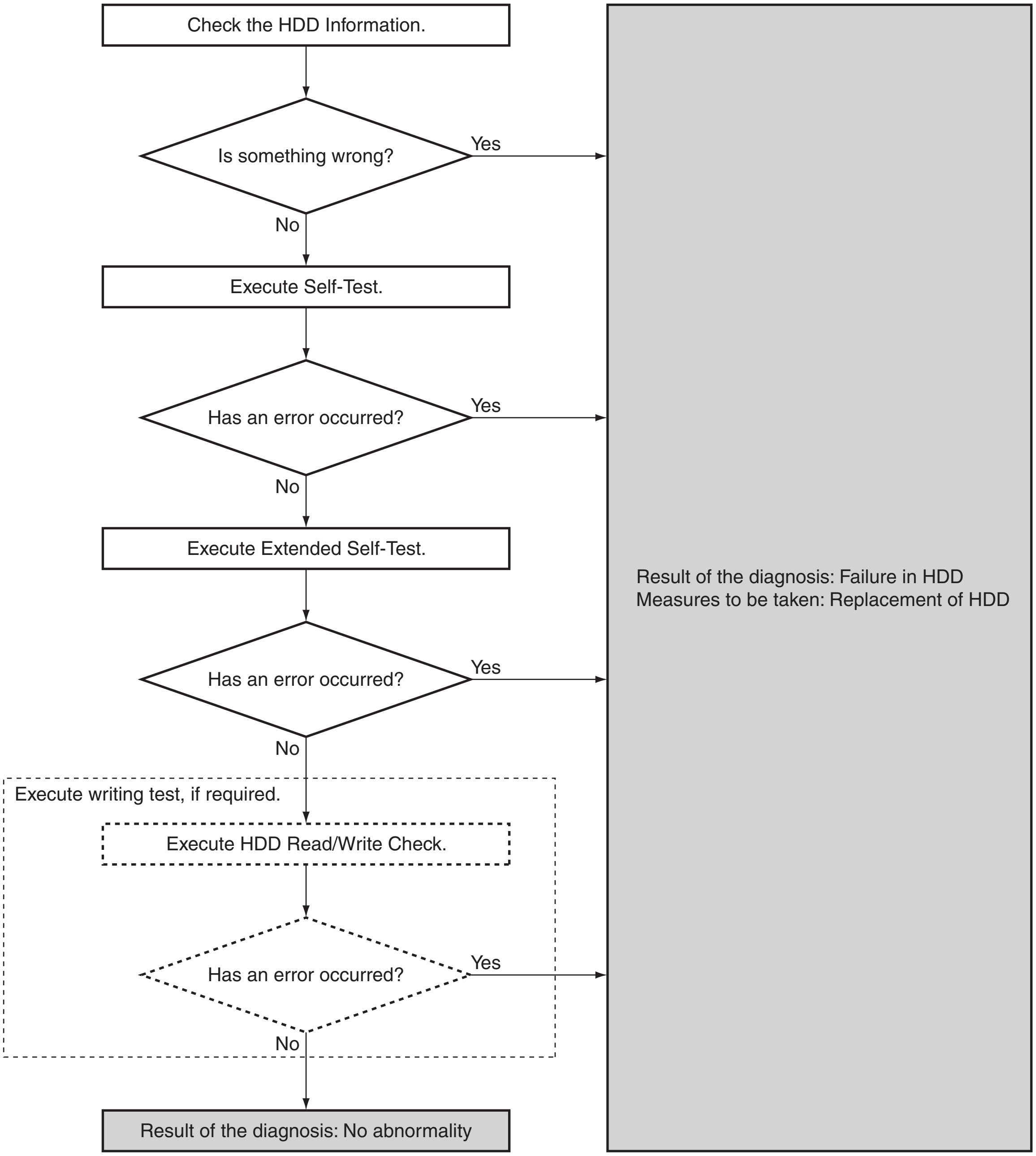
Purpose:
With use of the HDD-diagnostic program contained in the product itself, physical errors on the HDD can be diagnosed. Use this program to diagnose whether or not the HDD is in failure when one of the symptoms indicated below is recognized, or when a failure in the HDD is suspected.

Symptoms of failure in HDD:
(1) HDD Error
(2) Failure in HDD recording or playback
(3) HDD not recognized

Tool to be used:
Remote control unit for servicing (GGF1381)

◆ Flow of HDD Diagnosis

(1) Flowchart of HDD diagnosis


Check the HDD Information.
Is something wrong?
Yes
No
Execute Self-Test.
Has an error occurred?
Yes
No
Execute Extended Self-Test.
Has an error occurred?
Yes
No
Execute writing test, if required.
Execute HDD Read/Write Check.
Has an error occurred?
Yes
No
Result of the diagnosis: No abnormality
Result of the diagnosis: Failure in HDD
Measures to be taken: Replacement of HDD

(2) Overview of the diagnosis items

HDD Information	This is a display for checking the HDD information, such as the model name of the HDD, continuous power-on time, authentication status, and results of the diagnosis on the end of service life.
SELF TEST	This is a simplified diagnosis for the HDD. A serious failure in the HDD can be detected with this test. Time required for testing: Approx. 60 sec.
EXTENDED SELF TEST	This is a reading test across all sectors of the HDD. Data recorded on the HDD will not be erased, because no writing operation is performed. Time required for testing: Approx. 2.5 hours/500 GB 1.3 hours/250 GB
HDD Read / Write Check	This is a writing, reading, and comparing test across all sectors of the HDD. **All data recorded on the HDD will be erased**, because all the data are to be overwritten. **Be sure to obtain your client's consent beforehand.** Time required for testing: Approx. 15 hours/500 GB 8 hours/250 GB

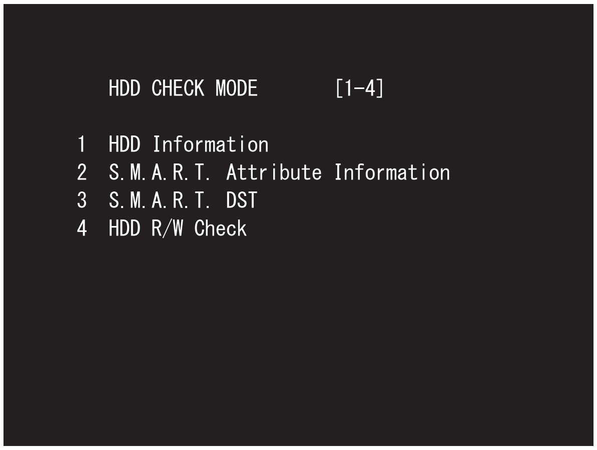
◆ How to Start or Terminate the Diagnostic Program

How to start/terminate the diagnostic program

Use the remote control unit for servicing.
How to start: Press the "ESC", "CX", "0", and "1" keys simultaneously.
How to terminate: Press the "ESC" key.
Do NOT perform other operations on the unit while the HDD diagnosis is in progress. Although the diagnostic program is designed to function independently from the unit's functions, an operation on the unit during a diagnosis may cause a malfunction.
The status of the unit recommended during diagnosis is as follows: All stop, no timer recording (including auto-recording), and Input selection to L1-L3.

◆ Diagnosis Procedures

① Display the menu on the screen.
The menu indicated below is displayed when the diagnostic program is started. To enter each mode, press the corresponding key "1"-"4" on the remote control unit for servicing.



```
      HDD CHECK MODE        [1-4]

   1  HDD Information
   2  S.M.A.R.T. Attribute Information
   3  S.M.A.R.T. DST
   4  HDD R/W Check
```

Tests to be executed

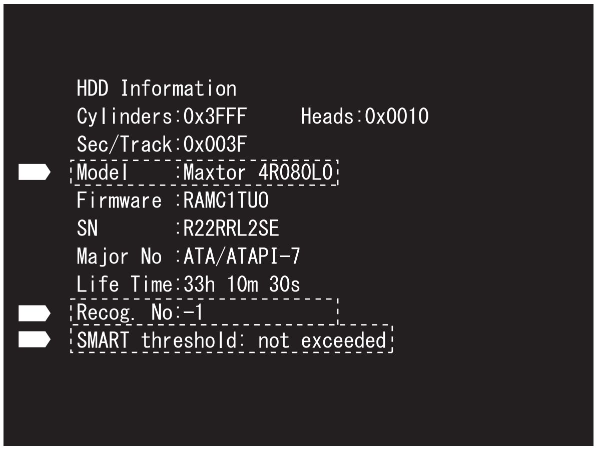
① HDD Information:
Check of the HDD information

② S.M.A.R.T. DST:
Executing a simplified test or a reading test of all data

③ HDD R/W Check:
Executing a writing/reading test of all data. All data on the HDD will be erased if this test is executed.

Note: "2. S.M.A.R.T. Attribute . . ." is not to be used.

② Check the HDD information.
Press the "1" key on the remote control unit for servicing. Check the following data:
Model: Is the correct model name of the HDD displayed?
Recog. No: Is a positive value displayed?
SMART threshold: Is "not exceeded" displayed?



```
HDD Information
Cylinders:0x3FFF     Heads:0x0010
Sec/Track:0x003F
Model    :Maxtor 4R080L0
Firmware :RAMC1TU0
SN       :R22RRL2SE
Major No :ATA/ATAPI-7
Life Time:33h 10m 30s
Recog. No:-1
SMART threshold: not exceeded
```

Detailed description

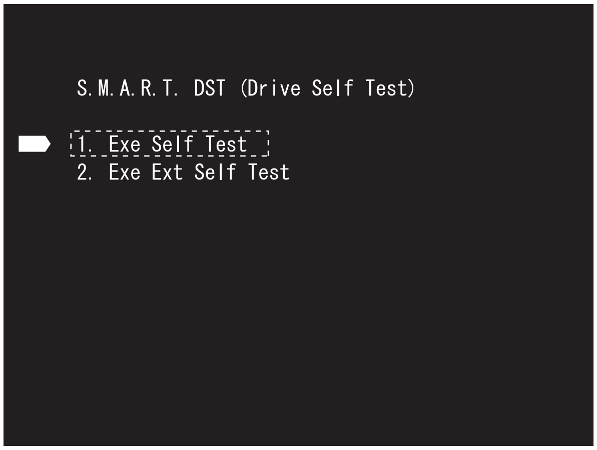
① Model:
For the correct model name, refer to the display of the unit.

② Recog. No:
Positive value: The HDD has been authenticated.
Negative value: The HDD has not been authenticated.

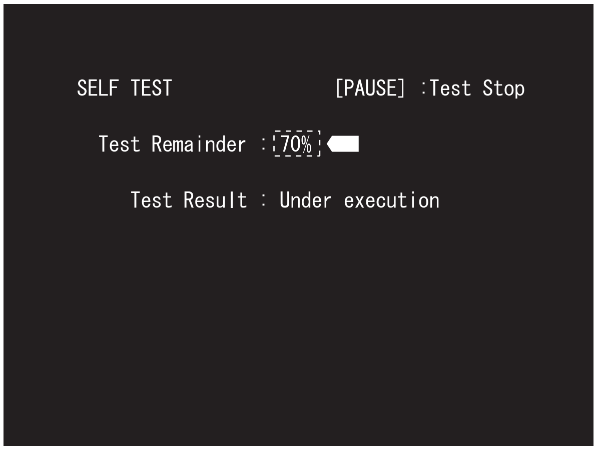
③ SMART threshold:
exceeded: The HDD has come to the end or near the end of its service life.
not exceeded: The HDD has not reached the end of its service life.

To return to the menu screen, press the "Clear" key.

③ Execute Self-Test.
Press the "3" key on the remote control unit for servicing while the menu screen is displayed.
When the following screen is displayed, press the "1" key to start the Self-Test.



```
S.M.A.R.T. DST (Drive Self Test)

1. Exe Self Test
2. Exe Ext Self Test
```



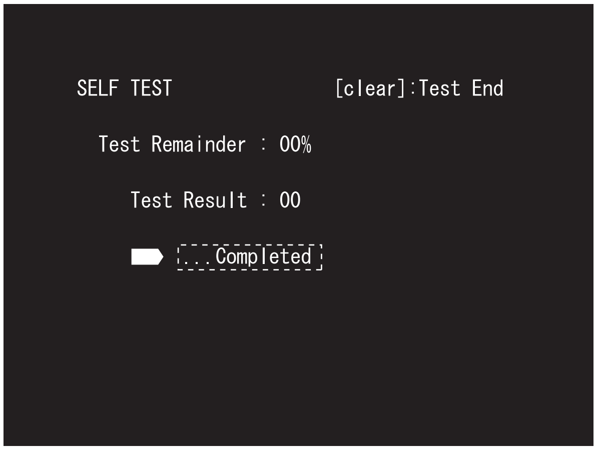
```
SELF TEST             [PAUSE] :Test Stop

  Test Remainder : 70%

     Test Result : Under execution
```

The progress of the test is displayed on the screen. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%.
Check whether or not an error has occurred after the test is finished.

Diagnosis results
- Without an error: ". . . Completed" is displayed.
  Then, proceed to the Extended Self-Test.
- With an error: ". . . Error" is displayed. Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

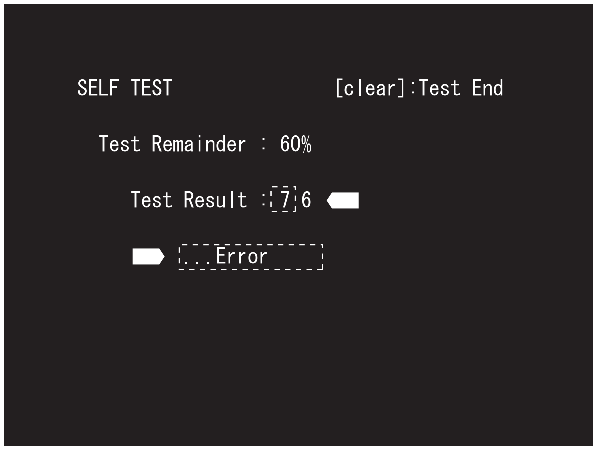
Note: If the result of the second test is the same, replacement of the HDD is required.

Example: No error



```
SELF TEST             [clear]:Test End

  Test Remainder : 00%

     Test Result : 00

     ...Completed
```

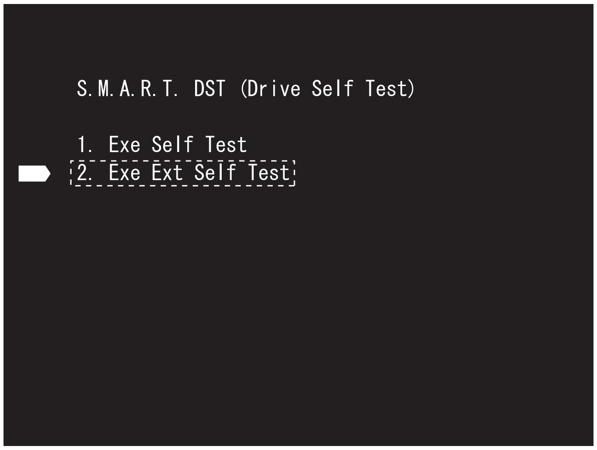
Example: With an error



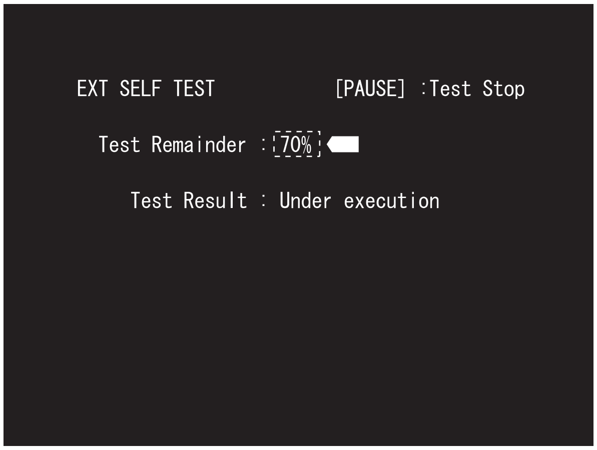
```
SELF TEST             [clear]:Test End

  Test Remainder : 60%

     Test Result : 76

     ...Error
```

To return to the menu screen, press the "Clear" key.

④ Execute the Ext (Extended) Self-Test.



```
S.M.A.R.T. DST (Drive Self Test)

1. Exe Self Test
2. Exe Ext Self Test
```



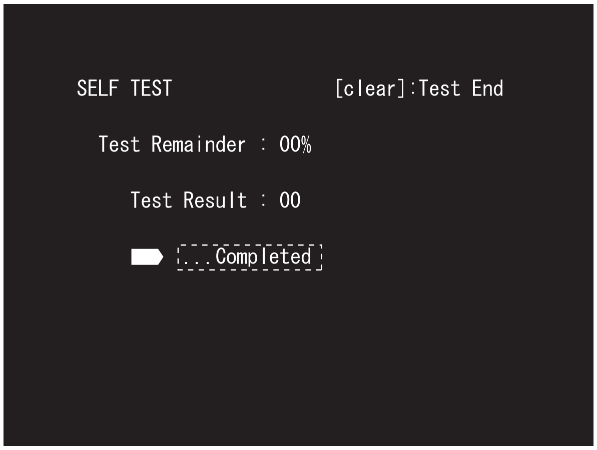
```
EXT SELF TEST          [PAUSE] :Test Stop

  Test Remainder : 70%

     Test Result : Under execution
```

Press the "3" key while the menu screen is displayed, then the "2" key on the remote control unit for servicing. The Extended Self-Test starts. The percentage remaining of the test is displayed on the screen, and the test is terminated when the percentage reaches 00%. Check whether or not an error has occurred after the test is finished.

Diagnosis results

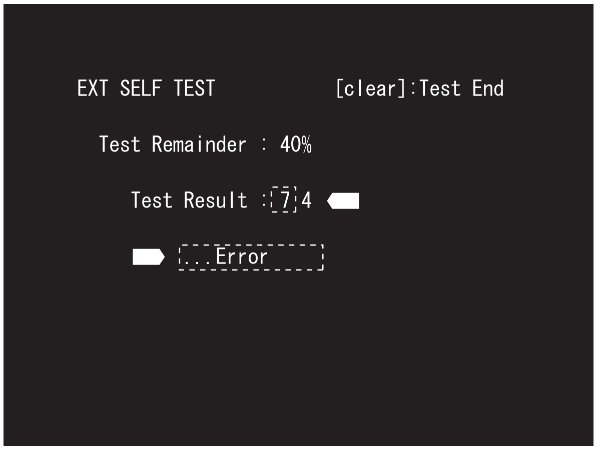
- Without an error: ". . . Completed" is displayed.
  If no error occurs up until this stage, HDD operations are normal except for writing operations.
  If the unit has a failure in HDD playback, a block other than the HDD may be in failure.
  If the unit's failure is in HDD recording, however, the next HDD Read/Write Check must be executed to test writing operations.
- With an error: ". . . Error" is displayed.
  Look at the number in Test Result.
  If the place value for tens is 1 or 2, execute the Ext Self-Test again.
  If it is from 3 to 7, the HDD must be replaced.

Note: If the result of the second test is the same, replacement of the HDD is required.



Example: No error

```
SELF TEST               [clear]:Test End

  Test Remainder : 00%

     Test Result : 00

        ...Completed
```

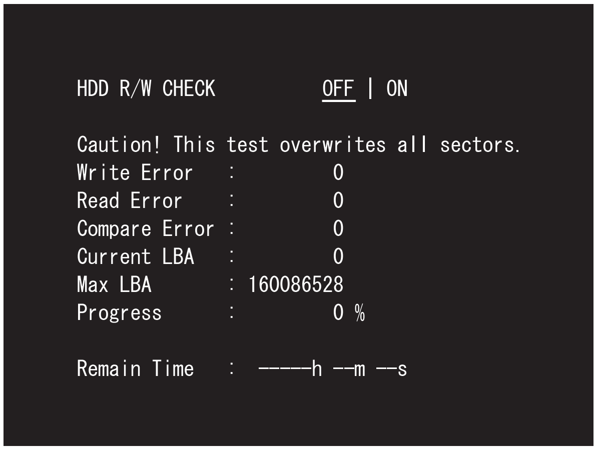


Example: With an error

```
EXT SELF TEST          [clear]:Test End

  Test Remainder : 40%

     Test Result : 74

        ...Error
```

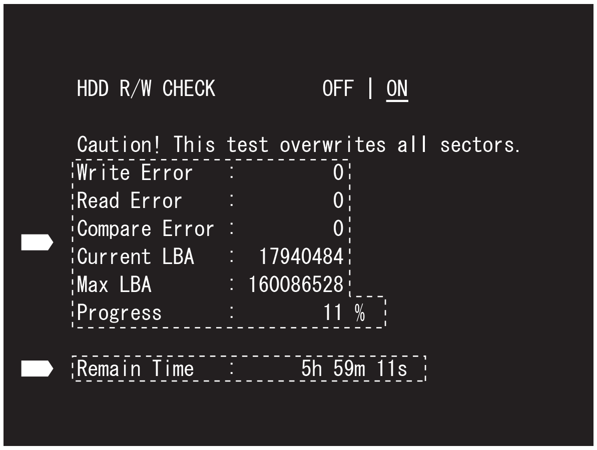
To return to the menu screen, press the "Clear" key.

⑤ Execute the HDD R/W Check.
Before executing this test, **be sure to obtain your client's consent for erasure of HDD data**.
Press the "4" key while the menu screen is displayed then the "SKIP ►►I" key to start the HDD R/W Check.
To stop executing the test (OFF) while it is in progress, press the "SKIP I◄◄" key.



```
HDD R/W CHECK          OFF | ON

Caution! This test overwrites all sectors.
Write Error   :         0
Read Error    :         0
Compare Error :         0
Current LBA   :         0
Max LBA       : 160086528
Progress      :         0 %

Remain Time   :  -----h --m --s
```

The display on the left indicates the progress of the test.
The percentage of the test progress is displayed on the screen, and the test is finished when the percentage reaches 100%.



```
HDD R/W CHECK          OFF | ON

Caution! This test overwrites all sectors.
Write Error   :         0
Read Error    :         0
Compare Error :         0
Current LBA   :  17940484
Max LBA       : 160086528
Progress      :        11 %

Remain Time   :      5h 59m 11s
```

Detailed description on each item on the screen
- Write Error: Number of write errors
- Read Error: Number of read errors
- Compare Error: Number of comparison errors
- Current LBA: The address during testing
- Max LBA: Highest address number of the HDD
- Progress: Percentage of test progress (%)
- Remain Time: Estimated time required for finishing the test across all sectors.
  Estimated time: 15 hours/500 GB
  8 hours/250 GB

Diagnosis results
- If no error occurs in any of the Write/Read/Compare items, the HDD is in normal condition and is not required to be replaced. A block other than the HDD is in failure.
- If any error occurs, the HDD must be replaced.

To terminate the diagnostic program, press the "ESC" key.

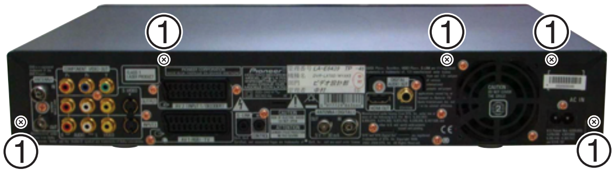
7. DISASSEMBLY

Note 1: Do NOT look directly into the pickup lens. The laser beam may cause eye injury.
Note 2: Even if the unit shown in the photos and illustrations in this manual may differ from your product, the procedures described here are common.

◆ Diagnosis

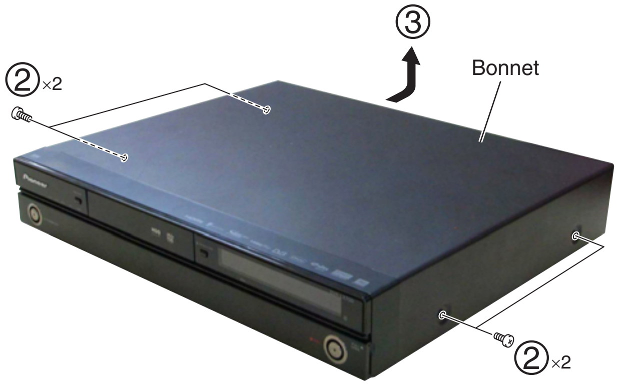
1 Bonnet

① Remove the five screws.



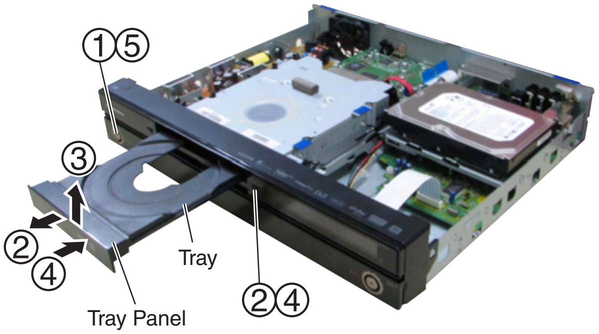
● **Rear view**

② Remove the four screws.
③ Remove the bonnet.



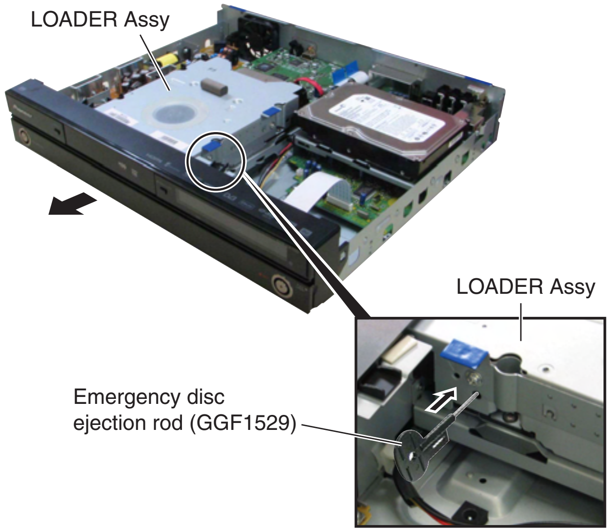
2 Tray Panel

① Press the ⏻ STANDBY/ON button to turn on the power.
② Press the ▲ OPEN/CLOSE button to open the Tray.
③ Remove the Tray Panel.
④ Press the ▲ OPEN/CLOSE button to close the Tray.
⑤ Press the ⏻ STANDBY/ON button to turn off the power.



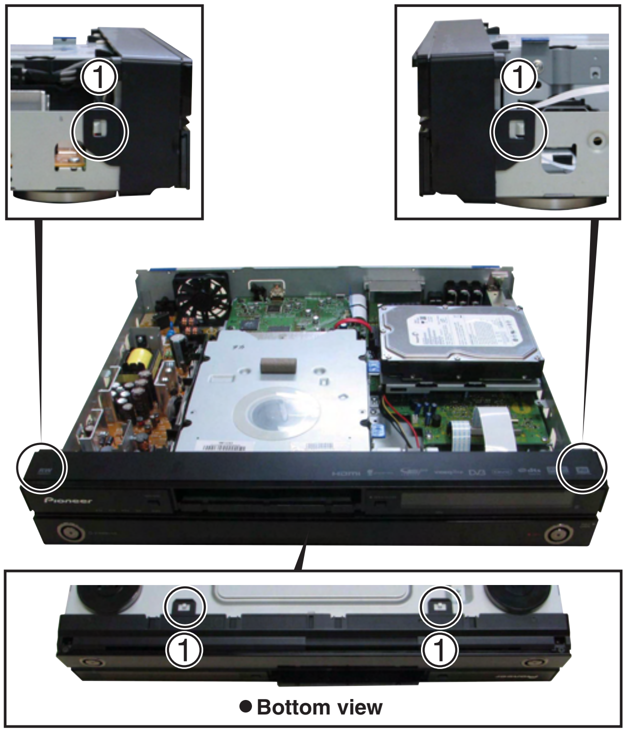
● **How to open the Tray when the power cannot be turned on**

When the Tray cannot be opened because the power cannot be turned on, it can be opened using the Emergency disc ejection rod (GGF1529). (A long, thin rod about 1 mm in diameter can be used in place of the rod.)



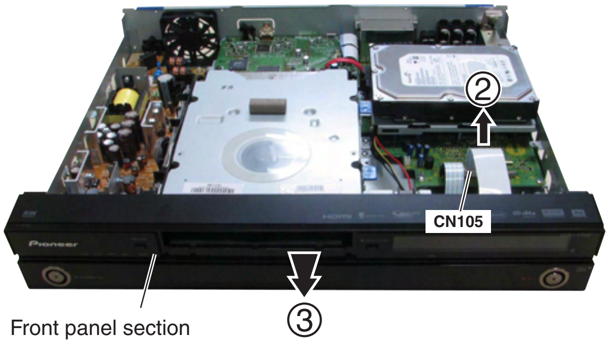
3 Front Panel Section

① Unhook the four hooks.



② Disconnect the one flexible cable.

③ Remove the Front panel section.

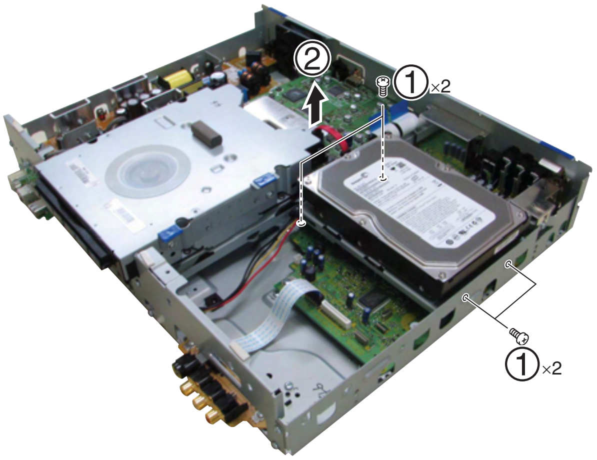


4 HDD and LOADER Assy

● HDD

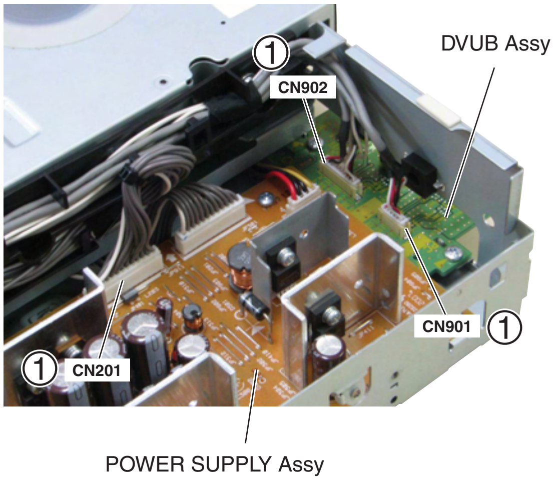
① Remove the four screws.

② Remove the SATA Cable.

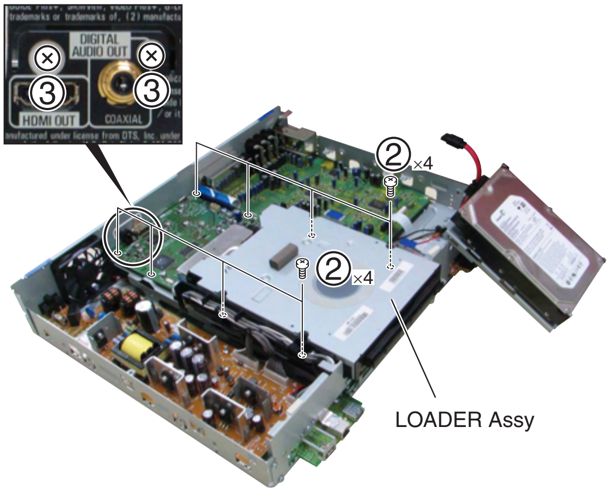


● LOADER Assy

① Disconnect the three connectors (CN201,CN901,CN902).



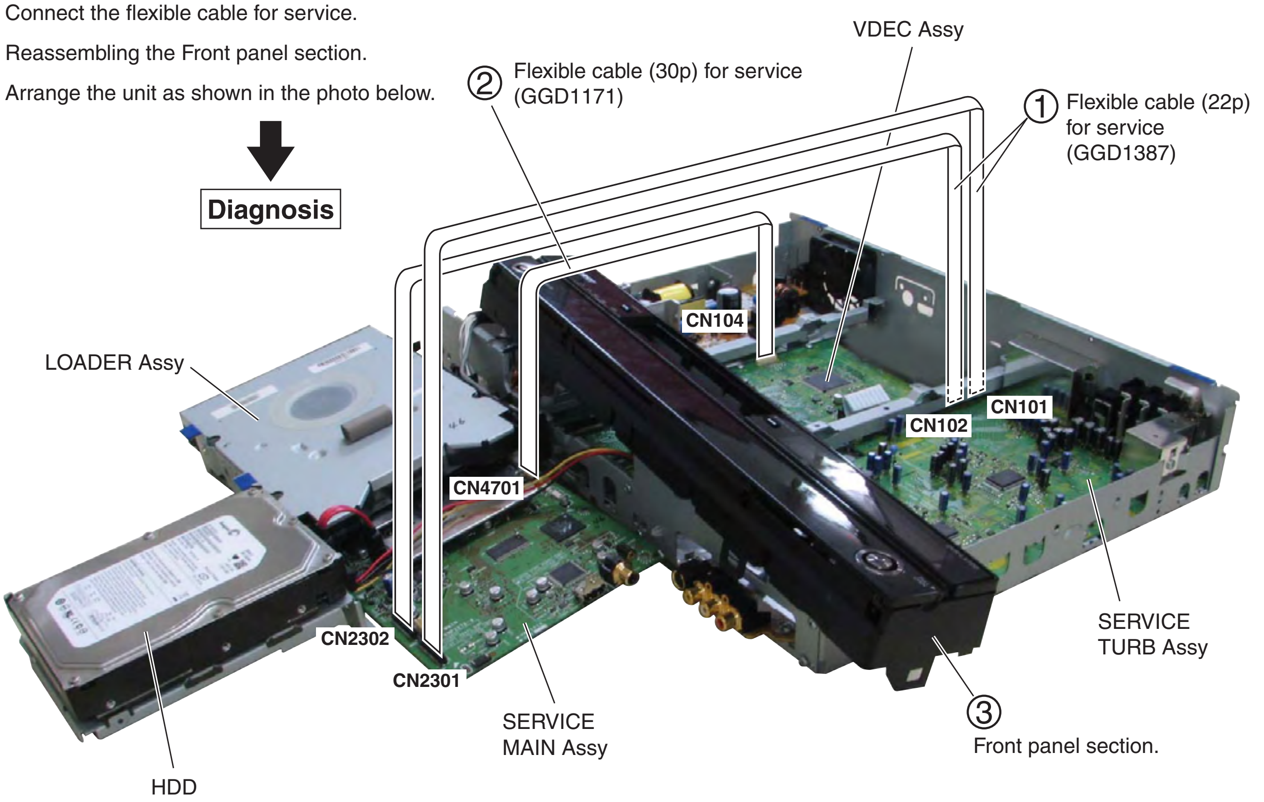
② Remove the eight screws.
③ Remove the two screws (Rear Panel Side).



5 Diagnosis

① Connect the two flexible cables for service.
② Connect the flexible cable for service.
③ Reassembling the Front panel section.
④ Arrange the unit as shown in the photo below.

Diagnosis



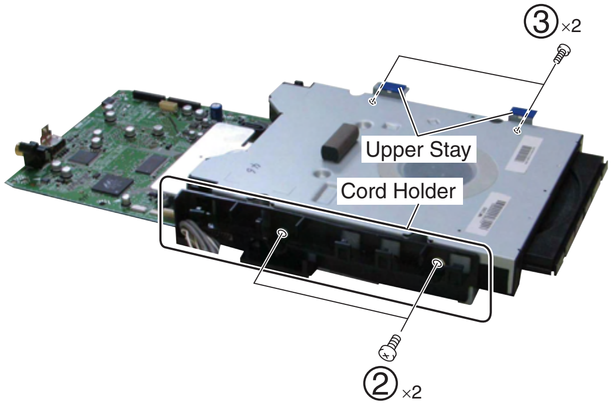
◆ Access to the MAIN Assy, Cleanning the Pickup Lens

• Writer Stay L and R

① Remove the binder.

② Remove the two screws and Cord Holder.

③ Remove the two screws and Upper Stay.

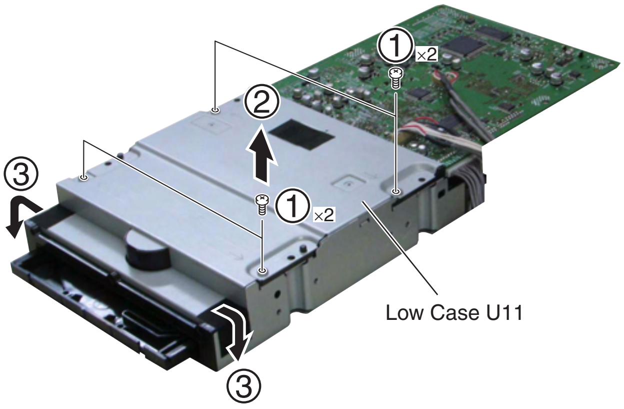


• Low Case U11 and Loader Assy

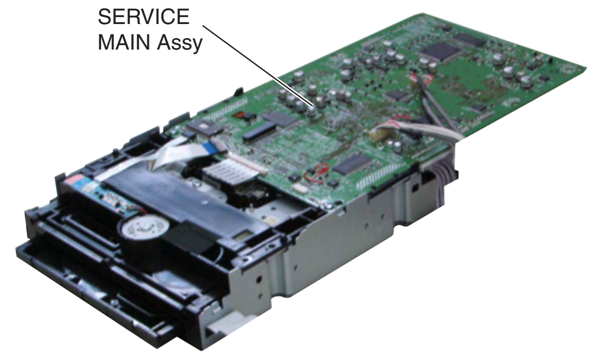
① Remove the four screws.

② Remove the Low Case U11.

③ Remove the tape.

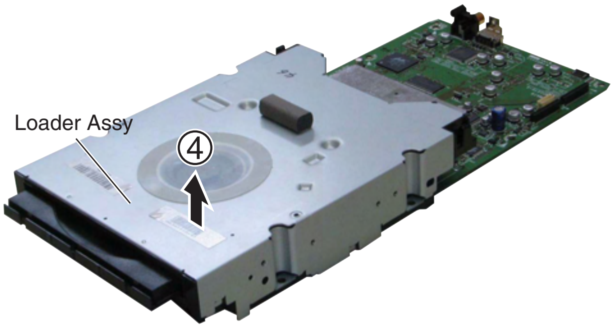


● **Bottom view**



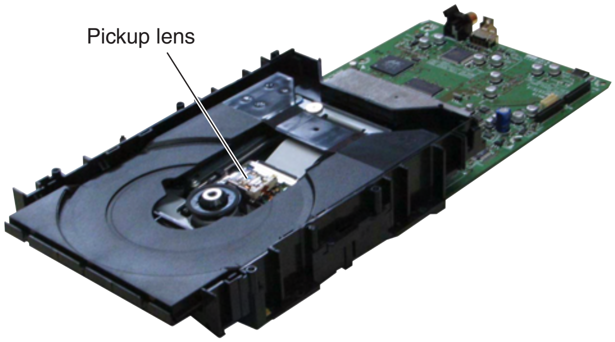
● **Bottom view**

④ Remove the Loader Assy.



Before shipment, be sure to clean the Pickup lens, using the following cleaning materials:

Cleaning liquid : GEM1004
Cleaning paper : GED-008



8. EACH SETTING AND ADJUSTMENT

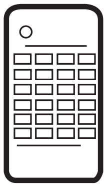
8.1 MODEL SETTING

[Purposes]

When the MAIN Assy and/or TUJB Assy that are(is) commonly used with another model are(is) replaced, they(it) must recognize the model of this unit.

Items to be set: The model number, destination, and region No. must be set.

[Tool to be used]



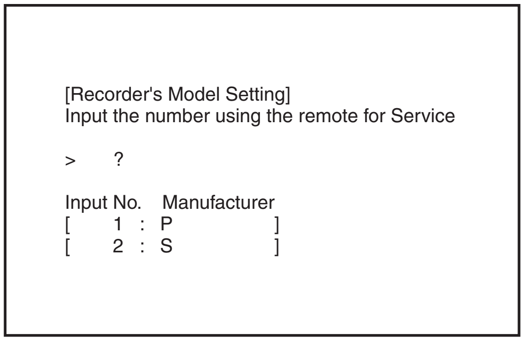
Remote control unit for servicing
(GGF1381)

[Notes]

- Once the setting has been made, it can never be changed. Be sure to make the setting correctly.
- As this setting resets the Assy(s) in question to the factory-preset status, it is recommended that you obtain the customer's consent beforehand.

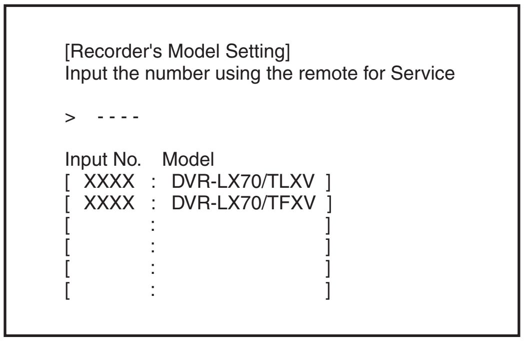
[Procedures]

① After power on, the following screen is displayed on TV monitor. Press “1” by using the remote control unit for service. Do not choose “2” as it is for OEM models. If you have chosen “2”, disconnect the AC power cord.



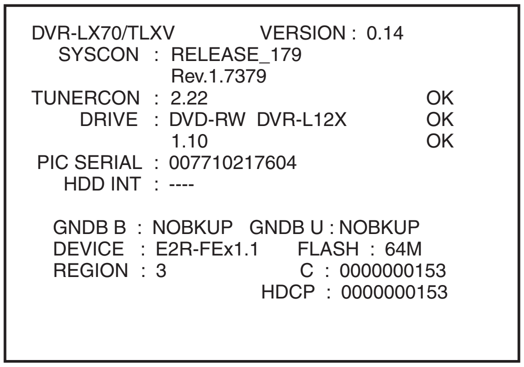
```
[Recorder's Model Setting]
Input the number using the remote for Service

>      ?

Input No.   Manufacturer
[       1  :  P                ]
[       2  :  S                ]
```

② The following screen is displayed on TV monitor. Press four digits properly by using the remote control unit for service,
according to the screen information.



```
[Recorder's Model Setting]
Input the number using the remote for Service

>   - - - -

Input No.   Model
[  XXXX   :   DVR-LX70/TLXV  ]
[  XXXX   :   DVR-LX70/TFXV  ]
[           :                          ]
[           :                          ]
[           :                          ]
[           :                          ]
```

③ Disconnect then reconnect the AC power cord of the unit. Be careful not to impart vibration to the unit immediately after the AC power cord is disconnected.



```
DVR-LX70/TLXV              VERSION :  0.14
     SYSCON  :  RELEASE_179
                     Rev.1.7379
TUNERCON  :  2.22                              OK
        DRIVE  :  DVD-RW  DVR-L12X             OK
                     1.10                              OK
 PIC SERIAL  :  007710217604
     HDD INT  :  ----

    GNDB B  :  NOBKUP   GNDB U : NOBKUP
    DEVICE  :  E2R-FEx1.1      FLASH  :  64M
    REGION  :  3                      C  :  0000000153
                                   HDCP  :  0000000153
```

④ Reset the recorder to all its factory settings.
(Make sure that the recorder is on. Press and hold ■ (STOP) key and press ⏻ (STANDBY/ON) key on the front panel.)
The recorder turns off with all settings reset.

⑤ Press [ESC] then [DISP] keys by using the remote control unit for servicing, and then confirm each Model Name.

⑥ End

8.2 ADJUSTMENT

[Purposes]

If a combination of a main board and PU is changed, the LD power adjustment and adjustment for disc judgment needs to be made for a new combination of the main board and PU since the adjusted LD-power value becomes inappropriate for the new combination and stable playback and recording to disc becomes impossible.

[Tools to be used]

GGF1381 : Service Remote Control Unit
GGV1054 : CD-ROM (CDT-313)
GGV1036 : DVD-ROM DL (DVDT-002)
GGV1278 : Blank DVD-R (That's DR-C12WTY5PA)
GGV1282 : Blank DVD-RW (JVC VD-W120XH5)
GGV1284 : Blank DVD-RAM (maxell DRM120C.1P5S)

[Notes] Never turn the power off while any of the following operations is in progress:

- While laser diode (LD) power adjustment is being performed normally by the unit
- While adjustment for disc judgment is being performed

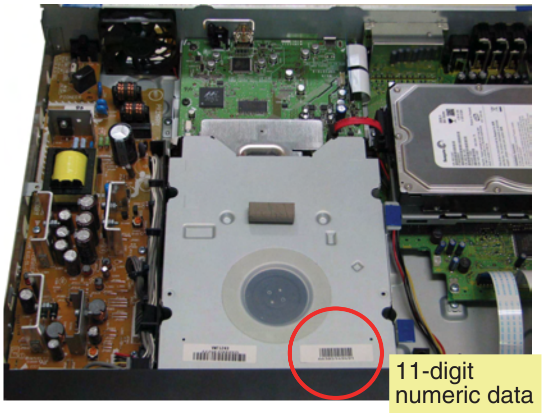
[Explanation on each adjustment mode]

- Drive Adjustment Mode

  This mode is used to select each mode for LD power adjustment.
  In this mode, you can confirm an 11-digit number provided for the LD power adjustment.
  The 11-digit number is stored in FLASH (IC200) of the main board.

- PU Data Setting Mode

  This mode is used to enter an 11-digit number provided for the LD power adjustment.
  If you have changed a combination of the main board and PU, enter an 11-digit number marked on the case of a loader which is provided in pairs with PU.
  The LD power adjustment is made by using this 11-digit number.



- Power Adjustment Mode

  This mode is used to execute the LD power adjustment and to check the progress of the adjustment.
  In case an error occurs during the adjustment, you can also check the error details in this mode.

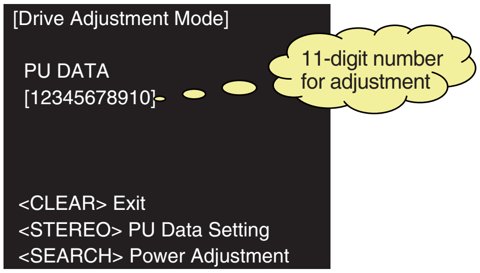
[How to enter Drive Adjustment Mode]

To enter the Drive Adjustment Mode, press [ESC]+[CX]+[1]+[0] on the remote control unit for service.

Though the LD power adjustment can be executed irrespective of the product functions, do not operate the product during the LD power adjustment to prevent misadjustment.

[Operation procedure]

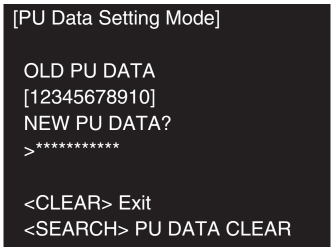
1. When you enter the Drive Adjustment Mode, the following screen is displayed. On this screen, you can check 11-digit numeric data stored in FLASH of MAIN Assy, and can also switch over between each mode.



```
[Drive Adjustment Mode]

 PU DATA
 [12345678910]



<CLEAR> Exit
<STEREO> PU Data Setting
<SEARCH> Power Adjustment
```

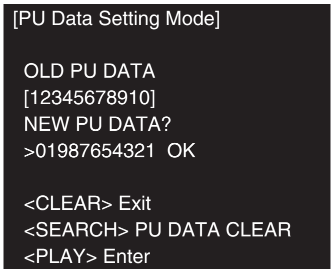
11-digit number for adjustment

2. To enter the PU Data Setting Mode, press [STEREO] on the remote control unit for service. Entering the PU Data Setting Mode displays the following screen.



```
[PU Data Setting Mode]

 OLD PU DATA
 [12345678910]
 NEW PU DATA?
 >***********

 <CLEAR> Exit
 <SEARCH> PU DATA CLEAR
```

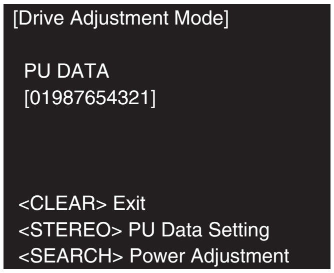
3. By pressing [0] to [9] keys on the remote control unit for service, enter an 11-digit number marked on the case of a loader provided in pairs with PU. Entering the 11-digit number displays the following screen.



```
[PU Data Setting Mode]

 OLD PU DATA
 [12345678910]
 NEW PU DATA?
 >01987654321  OK

 <CLEAR> Exit
 <SEARCH> PU DATA CLEAR
 <PLAY> Enter
```

4. To enter the 11-digit number, press [PLAY] on the remote control unit for service. The 11-digit number contains 2-digit checksum data to prevent input errors. The screens displayed for the correct/incorrect check sum are as follows.

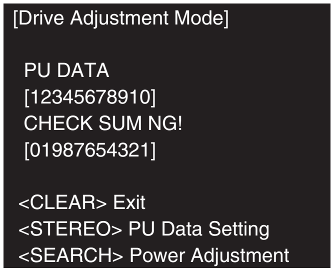
When the checksum is correct



```
[Drive Adjustment Mode]

 PU DATA
 [01987654321]



<CLEAR> Exit
<STEREO> PU Data Setting
<SEARCH> Power Adjustment
```

When the checksum is correct
Enter the Power Adjustment Mode and execute the LD power adjustment, as described in 5.

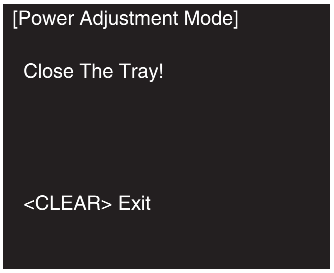
When the checksum is incorrect



```
[Drive Adjustment Mode]

 PU DATA
 [12345678910]
 CHECK SUM NG!
 [01987654321]

<CLEAR> Exit
<STEREO> PU Data Setting
<SEARCH> Power Adjustment
```

When the checksum is incorrect
The input data may be incorrect.
Return to 2 and enter the PU Data Setting Mode to re-enter the 11-digit number.

5. When the checksum is correct, enter the Power Adjustment Mode and execute the LD power adjustment.
   To enter the Power Adjustment Mode, press [SEARCH] on the remote control unit for service.
   Entering the Power Adjustment Mode displays the following screen and opens the tray automatically.



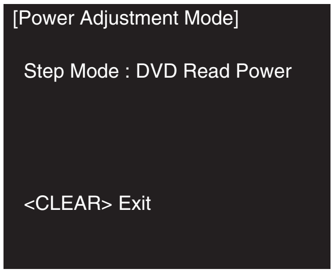
[Power Adjustment Mode]

Close The Tray!

<CLEAR> Exit

When the tray does not open
- Check if flexible cables and wire rods are connected properly.
- Errors in the loader, main board, or power source board are suspected.

6. Close the tray manually to execute the LD power adjustment mode.
   You can check the progress of adjustment in the following screen.



[Power Adjustment Mode]

Step Mode : DVD Read Power

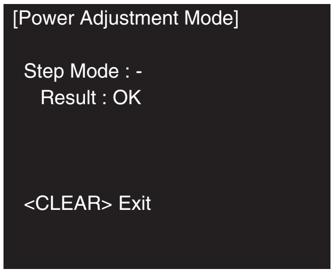
<CLEAR> Exit

Explanation on Step Mode (time needed)
- DVD Read Power (approx. 10 sec.)
  Adjustment of DVD playback power
- RAM Read Power (approx. 20 sec.)
  Adjustment of RAM playback power
- DVD Write Power (approx. 40 sec.)
  Adjustment of DVD recording power
- CD Read Power (approx. 10 sec.)
  Adjustment of CD playback power
- DVD Disc Judgment (approx. 30 sec.)
  Adjustment for DVD disc judgment
- CD Disc Judgment (approx. 30 sec.)
  Adjustment for CD disc judgment

7. When DVD Disc Judgment is displayed in the Step Mode, the tray opens automatically.
   Place DVDT-002 in the tray. The tray closes after 15 seconds from the time it opened.
   If the adjustment for DVD disc judgment is completed successfully, CD Disc Judgment is displayed in the Step Mode.

If the adjustment for DVD disc judgment is not completed successfully
- A disc other than DVDT-002 may have been placed.
  Place DVDT-002 in the tray.

8. When CD Disc judgment is displayed in the Step Mode, the tray opens automatically.
   Place CDT-313 in the tray. The tray closes after 15 seconds from the time it opened.
   If the adjustment for CD disc judgment is completed successfully, the following screen is displayed.
   Since the judgment is completed successfully, press [CLEAR] on the remote control unit for service and exit from the adjustment mode.



[Power Adjustment Mode]

Step Mode : -
Result : OK

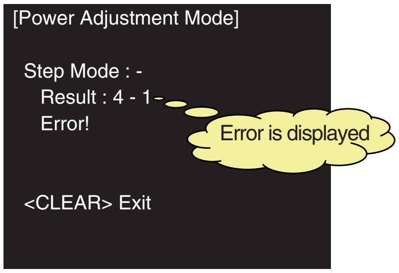
<CLEAR> Exit

If the adjustment for CD disc judgment is not completed successfully
- A disc other than CDT-313 may have been placed.
  Place CDT-313 in the tray.

9. Turn off the power.

[Error information]

In case of errors in the Power Adjustment Mode, the following screen is displayed.



```
[Power Adjustment Mode]

 Step Mode : -
   Result : 4 - 1
   Error!


 <CLEAR> Exit
```

Error is displayed

<u>About error indication</u>

[Left number]

The left number indicates the Step Mode in which the error has occurred.

2: Adjustment of DVD playback power
3: Adjustment of RAM playback power
4: Adjustment of DVD recording power
5: Adjustment of CD playback power
6: Adjustment for DVD disc judgment
7: Adjustment for CD disc judgment

[Right number]

The right number indicates the error information.

1 or 2: Error in the adjustment process
(Details of error)
- The PU flexible cables may not have been connected.
- TM or main board error is suspected.

3: Forced termination
This number is displayed when you pressed [CLEAR] on the remote control unit for service and executed forced termination.

[Contents to check]

1. Record the data to a designated disc (DVD-R / DVD-RW / DVD-RAM) in real time.
2. Measure an error rate at a place where recording is executed.
   Measurement method: Refer to the simplified error rate measurement method in the Service Mode.
3. Check that the error rate is 3.3e-3 or below.

<u>If the error rate is out of specification</u>

- Check if there is any defect or fingerprint on the disc. If you find any problem with the disc, change the disc and try the check again.
- The power adjustment may have been unsuccessful.
  Try the power adjustment again.

If the above two do not solve the problem, a defect with MAIN Assy or PU is suspected.

8.3 CPRM ID NUMBER AND DATA SETTING

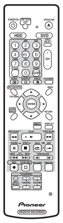
[Purposes]

For the DVD recorder,it is necessary with the recoding/playback of DVD-RW disc to set an individual number (ID number) and ID data to each recorder. If the number and data are not set correctly with the following procedure, cannot work with residual quantity 0:00 or operations in the future may not be guaranteed with RW disc. You will find the ID number to be set on the ID label on the rear panel.

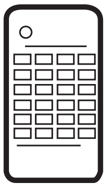
The Input is Necessary When:

- " CPRM ERR" is displayed on the FL display immediately after the power is turned on or in Stop mode.
- When the MAIN ASSY or the HDD is exchanged.

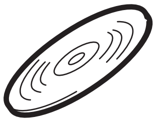
[Tools to be used]



Remote control unit supplied with the unit (VXX3267)



Remote control unit for servicing (GGF1381)



DVD Recorder Data Disc (Type 2)

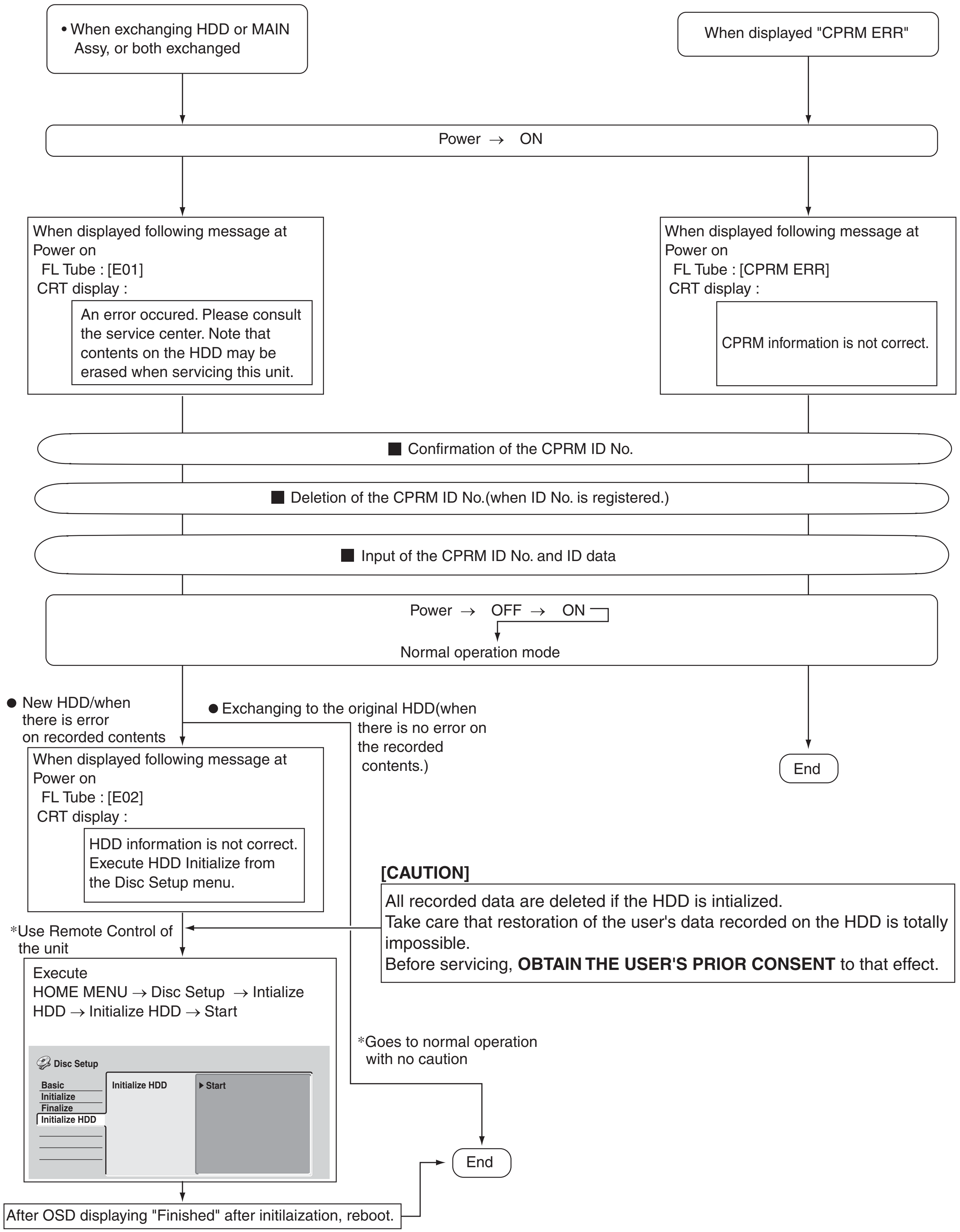
Be sure to use the latest disc (Type 2).
In Oct. 2007, the latest disc is GGV1305.

[Notes]

Important: If no ID label is found on the rear panel, write down the specified ID number by checking it according to "How to confirm the ID number" shown below.

- Input the ID number while the unit is in Stop mode.
- After the data are read from the data disc (Type 2), the disc will automatically be unloaded.

◆ Input Flow of the ID No. and ID Data When Exchanging HDD or MAIN Assy



- When exchanging HDD or MAIN Assy, or both exchanged

When displayed "CPRM ERR"

Power → ON

When displayed following message at Power on
FL Tube : [E01]
CRT display :
An error occured. Please consult the service center. Note that contents on the HDD may be erased when servicing this unit.

When displayed following message at Power on
FL Tube : [CPRM ERR]
CRT display :
CPRM information is not correct.

■ Confirmation of the CPRM ID No.

■ Deletion of the CPRM ID No.(when ID No. is registered.)

■ Input of the CPRM ID No. and ID data

Power → OFF → ON
Normal operation mode

● New HDD/when there is error on recorded contents

● Exchanging to the original HDD(when there is no error on the recorded contents.)

End

When displayed following message at Power on
FL Tube : [E02]
CRT display :
HDD information is not correct. Execute HDD Initialize from the Disc Setup menu.

[CAUTION]

All recorded data are deleted if the HDD is intialized.
Take care that restoration of the user's data recorded on the HDD is totally impossible.
Before servicing, **OBTAIN THE USER'S PRIOR CONSENT** to that effect.

*Use Remote Control of the unit

Execute
HOME MENU → Disc Setup → Intialize HDD → Initialize HDD → Start

*Goes to normal operation with no caution

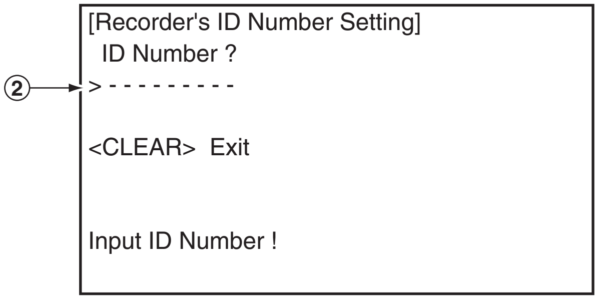
End

After OSD displaying "Finished" after initilaization, reboot.

◆ How to Input the ID Number and ID Data

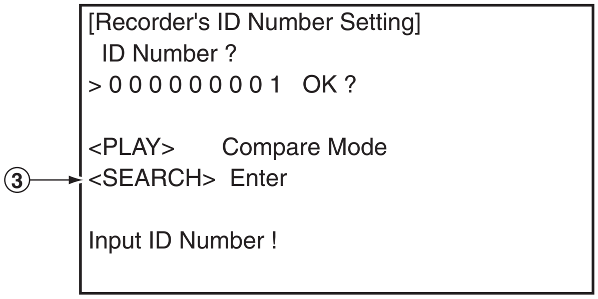
① To enter the input mode, press ESC + STEREO keys sequentially in a status with no ID number set, such as after FLASH-ROM downloading.

② As number input is enabled when the unit enters the input mode, input the 9-digit ID number.
(The entered number is also displayed on the FL display.)



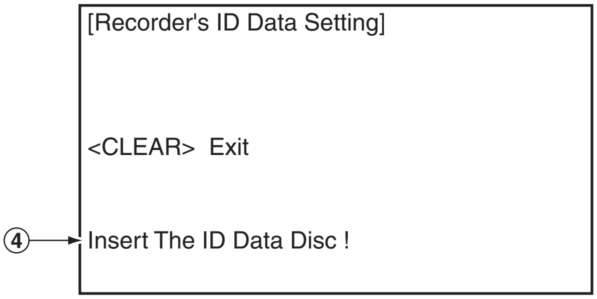
```
[Recorder's ID Number Setting]
  ID Number ?
> - - - - - - - - -

<CLEAR>  Exit


Input ID Number !
```

③ After inputting the number, press SEARCH keys to register the ID number.



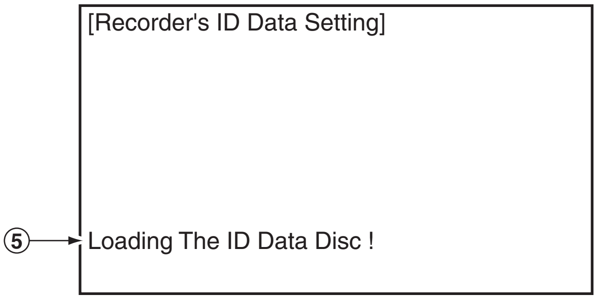
```
[Recorder's ID Number Setting]
  ID Number ?
> 0 0 0 0 0 0 0 0 1   OK ?

<PLAY>       Compare Mode
<SEARCH>  Enter

Input ID Number !
```

④ When the ID number has been registered, the unit enters the ID data input mode. (The FL display indicates "INSERT ID.")
In this condition, place the ID data disc on the tray and close the tray using the CLOSE key "■/⏏" on the player.



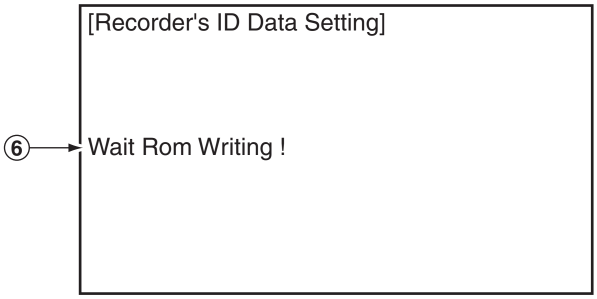
```
[Recorder's ID Data Setting]


<CLEAR>  Exit


Insert The ID Data Disc !
```

⑤ While the data are being read, the message shown in the figure at left is displayed on the screen.
(The FL display indicates "LOAD ID.")



```
[Recorder's ID Data Setting]




Loading The ID Data Disc !
```

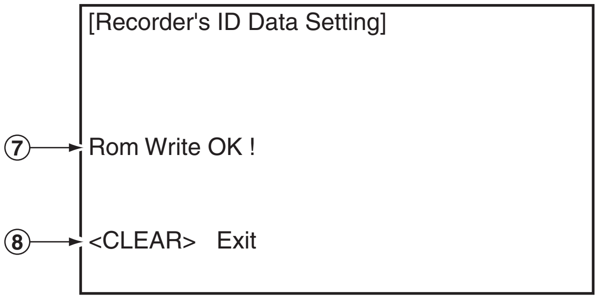
⑥ When the ID data have been read, the data are written to the FLASH-ROM.
(The FL display indicates "WRITE ID.")



```
[Recorder's ID Data Setting]


Wait Rom Writing !
```

⑦ When the ID data have been written to the FLASH-ROM, the message "Rom Write OK" is displayed on the screen.
(The FL display indicates "ID OK.")

⑧ After confirming this message, press CLEAR key to exit the input mode.



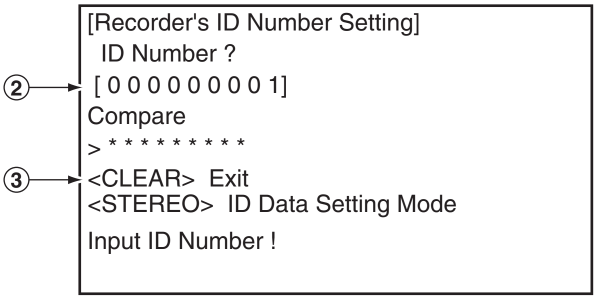
```
[Recorder's ID Data Setting]


Rom Write OK !


<CLEAR>   Exit
```

[How to Confirm the ID Number]

① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② The set ID number is displayed on the screen (and on the FL display), permitting you to confirm it.

③ To exit this mode, press CLEAR key.

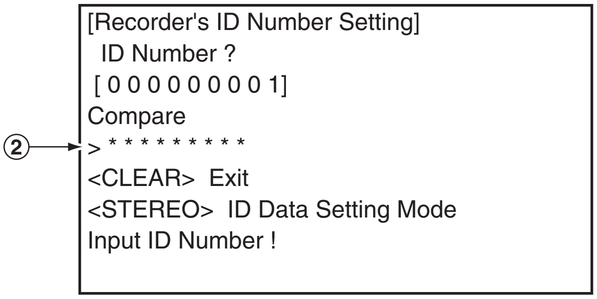


```
[Recorder's ID Number Setting]
  ID Number ?
 [ 0 0 0 0 0 0 0 0 1]
Compare
> * * * * * * * * *
<CLEAR>  Exit
<STEREO>  ID Data Setting Mode
Input ID Number !
```

[How to Clear the ID Number]

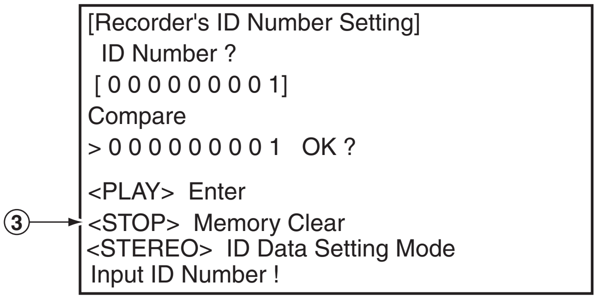
① Press ESC + STEREO keys sequentially with an ID number already set, and the unit enters the ID number confirmation mode.

② Input the same number as the ID number you have set.



```
[Recorder's ID Number Setting]
  ID Number ?
 [ 0 0 0 0 0 0 0 0 1]
Compare
> * * * * * * * * *
<CLEAR>  Exit
<STEREO>  ID Data Setting Mode
Input ID Number !
```

③ After inputting the number, press STOP key.
Only when the entered number matches the set ID number, the ID number is cleared and the unit exits this mode.
If the numbers do not match, you must return to step ②.
(STOP key is not accepted until 9 digits are entered.)



```
[Recorder's ID Number Setting]
  ID Number ?
 [ 0 0 0 0 0 0 0 0 1]
Compare
> 0 0 0 0 0 0 0 0 1   OK ?
<PLAY>  Enter
<STOP>  Memory Clear
<STEREO>  ID Data Setting Mode
 Input ID Number !
```

8.4 FIRMWARE UPDATE METHOD

[Purposes]

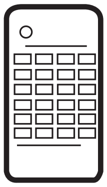
1. When the main board is replaced, the firmware versions for the system control computer, drive, and the TUFL microcomputer do not match, and operations of the unit may be destabilized.
   To match the versions for the above three, firmware downloading is necessary in the following cases:
   ① After the model setting
   ② When NG is displayed on the first screen (version information, etc.) of Service mode
   ③ After changing MAIN Assy or TURB Assy

2. Rewriting the firmware to the latest version may ameliorate the symptoms claimed by the customer.

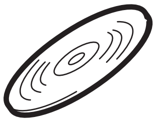
There are the following two methods for update: disc update and serial update

◆ Disc Update

[Tools to be used]



Remote control unit
for servicing
(GGF1381)



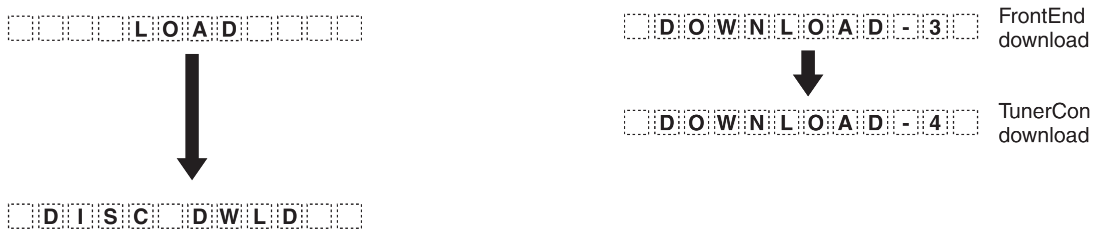
Firmware Update Disc

[Notes]

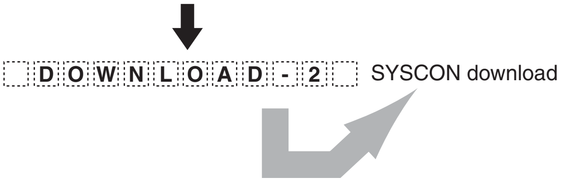
Be sure NOT to turn off the unit during update.
If the unit is turned off during update, the SYSCON, TUNERCON, DRIVE programs may not be properly rewritten, in which case the unit may not be able to initialize itself normally when turned on again.

[Procedure] ① Open a disc tray by pressing the "OPEN/CLOSE" button.
② Put the update disc on the tray. Press a " OPEN/CLOSE " button while pressing a "Record Stop" button on the frontpanel.
* The disc tray closes automatically and the disc is loaded.
* The disc tray opens automatically after loading.

FL display



③ Take out the Download Disc.



* After update is completed, the power turns off, and a disc tray closes automatically.
* It takes for about 7-8 minutes until update is completed.

④ The power turns on and press a " ESC " button, then press " DISP " button on the remote control unit for servicing.
⑤ Confirm a firmware release version.
⑥ Press " ESC " button on the remote control unit for servicing in order to exit the test mode.

[Tips]

(1) If the power is not correctly turned on or when the power is shut off during update, proceed as follows before performing update again:

- In a case where update was incorrectly terminated while "DOWNLOAD-2" was displayed on the FL display:
  The SYSCON program will not function correctly.
  If the program cannot be update from the disc or through serial communication, replace the MAIN Assy.

- In a case where update was incorrectly terminated while "DOWNLOAD-3" was displayed on the FL display:
  The DRIVE program will not function correctly.
  If the program cannot be update from the disc, replace the MAIN Assy.

- In a case where update was incorrectly terminated while "DOWNLOAD-4" was displayed on the FL display
  The program for the tuner microcomputer will not function correctly.
  If the program cannot be update from the disc, replace the TUNERCON microcomputer (IC101 : TURB Assy).

◆Serial Update

[Purposes]

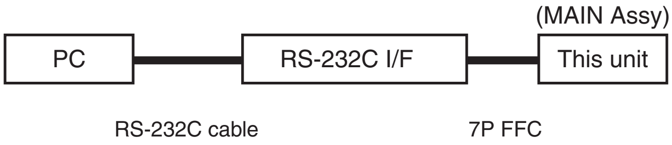
1. This method is used when disc update fails.

[Tools to be used]

- * PC with serial port
- * RS-232C straight cable
- * RS-232C I/F jig (GGF1348)
- * 7P FFC (VDA1681)
- * Update program (UFU.exe)
- * Firmware

[Connection]

Connect as follows:



[Procedures]

① Connect the 232C I/F jigs above way.

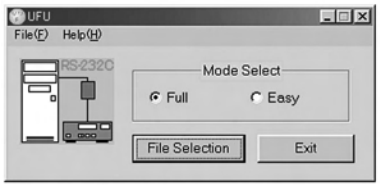
② Turn on the PC and start the " UFU.exe ".

③ Select the Firmware file. ("sz0" file)

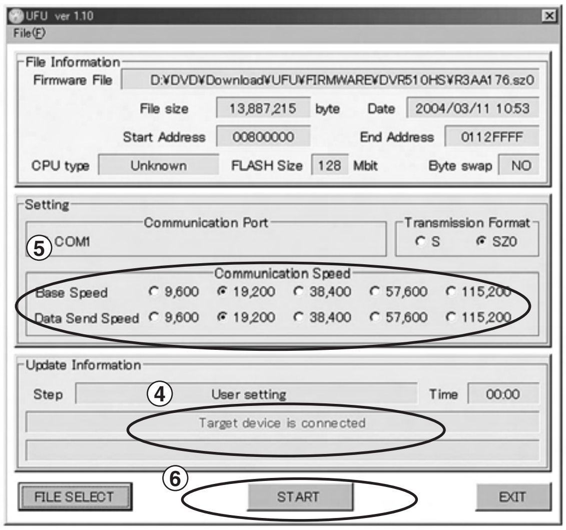
④ Turn the DVD recorder on and start the update program.
" Target Device is connected " is appeared on the screen.

⑤ Select the Communication Speed (Baud Rate)
a) Base Speed 115,200
b) Data Send Speed 115,200

⑥ START
- Even if you click "START" button, sometimes "Communication Error" may come out one to twice, and update may fail.
In this case, please click "START" again.
- Other factors can be considerd if update fails 3 times or more.
- And it takes about 20 minutes for updating the firmware.



Mode Select: ● Full ○ Easy



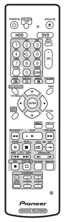
Firmware File D:¥DVD¥Download¥UFU¥FIRMWARE¥DVR510HS¥R3AA176.sz0
File size 13,887,215 byte Date 2004/03/11 10:53
Start Address 00800000 End Address 0112FFFF
CPU type Unknown FLASH Size 128 Mbit Byte swap NO
COM1
Transmission Format: ○ S ● SZ0
Base Speed ○ 9,600 ● 19,200 ○ 38,400 ○ 57,600 ○ 115,200
Data Send Speed ○ 9,600 ● 19,200 ○ 38,400 ○ 57,600 ○ 115,200
Step User setting Time 00:00
Target device is connected

8.5 VIDEO ADJUSTMENT FOR SPECIFIC AREA

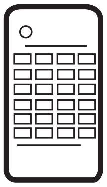
[Purposes]

Depending on the area, if a flicker may appear in a picture received by the tuner, it can be corrected or reduced with this setting.

[Tools to be used]



Remote control unit supplied with the unit (VXX3267)



Remote control unit for servicing (GGF1381)

◆ Specific-Channel Setting Mode

In this mode, specific settings can be made for up to 12 channels.
For channels that do not have specific settings, the settings of General Setting mode are applied.

[How to enter this mode]

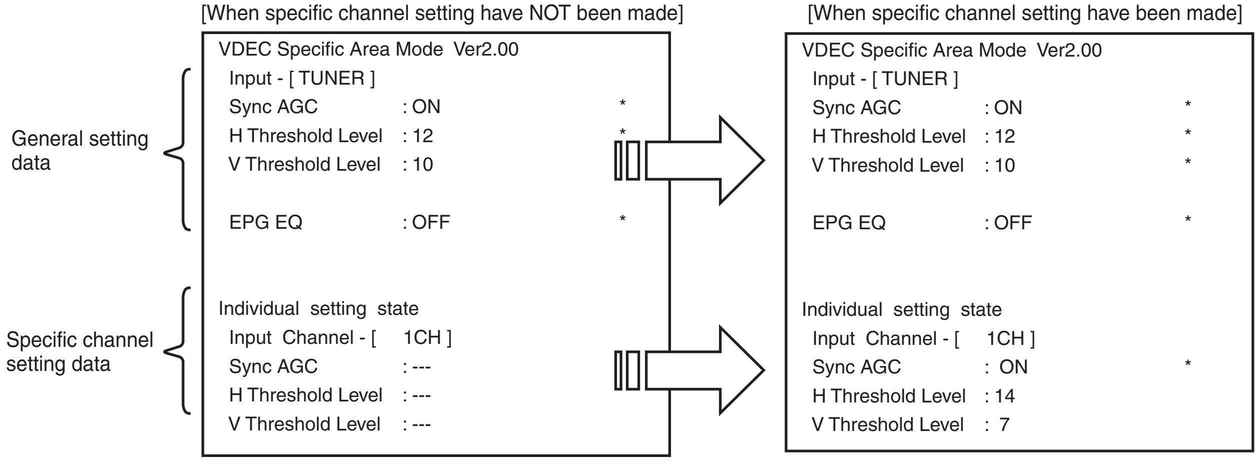
① Select a channel or line input (L1-L3) on which a specific setting is to be made.
② Press the ESC then CHP/TIM keys on the remote control unit for servicing. "General Setting mode" is displayed.
③ Press the DIG/ANA key in General Setting mode. Specific-Channel Setting mode is entered.

[How to exit] Press the ESC key on the remote control unit for servicing to return the Normal mode.

[Note] Setting is in effect only during recording/playback stop.

[Setting examples]

The setting examples in Specific-Channel Setting mode are shown below.
For details on each setting item, see "Table 1: Key operations in Specific-Area Setting mode."



[When specific channel setting have NOT been made]

```
VDEC Specific Area Mode  Ver2.00
  Input - [ TUNER ]
  Sync AGC          : ON         *
  H Threshold Level : 12         *
  V Threshold Level : 10

  EPG EQ            : OFF        *


Individual  setting  state
  Input  Channel - [   1CH ]
  Sync AGC          : ---
  H Threshold Level : ---
  V Threshold Level : ---
```

[When specific channel setting have been made]

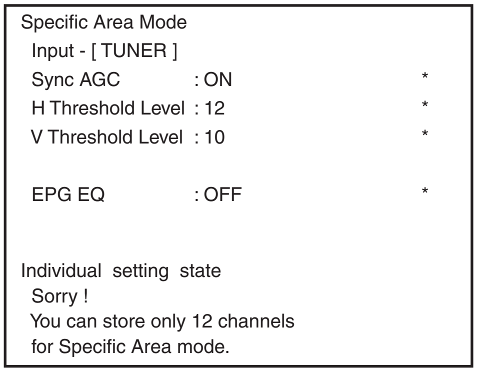
```
VDEC Specific Area Mode  Ver2.00
  Input - [ TUNER ]
  Sync AGC          : ON         *
  H Threshold Level : 12         *
  V Threshold Level : 10         *

  EPG EQ            : OFF        *


Individual  setting  state
  Input  Channel - [   1CH ]
  Sync AGC          :  ON        *
  H Threshold Level : 14
  V Threshold Level :  7
```

[Tips]

- If a channel that does not have specific settings is displayed, the setting figures are displayed as hyphens (- -).
- If the setting figures are not displayed as hyphens, those settings have been specifically set even if they are identical to the default settings or those of General Setting mode.
- The setting indicated with an asterisk (*) is the default.
- The channels to be indicated for "Input Channel" are as shown below:
  Line inputs: L1-L3, DV (DV is not valid for specific-area settings.)
  Tuner channels: Channels received by the tuner (channels to be set in Specific-Channel Setting mode, etc.)

[Tips]

- Indication when the maximum number (12) of channels have individual settings
  If a channel that does not have specific settings is currently selected, the indication will be as shown below, and individual data items cannot be set for that channel. To set individual data items for the currently selected channel, you must clear any specific-channel settings for one or more channels.



```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H Threshold Level : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *


Individual  setting  state
  Sorry !
  You can store only 12 channels
  for Specific Area mode.
```

[H Threshold Level]
The slice level setting for the horizontal(H)-sync separation circuit can be changed. By your changing the slice level, horizontal sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[V Threshold Level]
The slice level setting for the vertical(V)-sync separation circuit can be changed. By your changing the slice level, vertical sync disturbance may be ameliorated. Set the slice level to a value with which the least sync disturbance is seen.

[Receiver sensitivity setting for an electronic program guide (EPG)]
The sensitivity when receiving an electronic program guide can be selected. Set the sensitivity to "High" only if reception is unstable.

◆ General Setting Mode

[How to enter this mode]

- To shift from Specific-Channel Setting mode:
  Each time the DIG/ANA key is pressed, Specific-Channel Setting mode and General Setting mode are alternately selected.

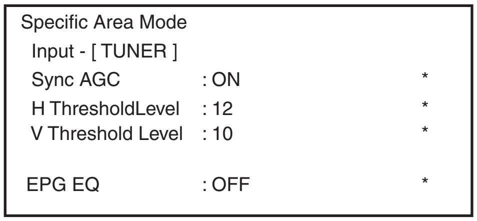
- To shift from Normal mode (recording/playback stop):
  Press the ESC then CHP/TIM keys.

[How to exit] Press the ESC key to return the normal mode.

[Setting examples]

Show setting example on the General Setting mode screen to the following.
Regarding setting of actual each item, refer to table 1 (key operations in specific-area setting mode).

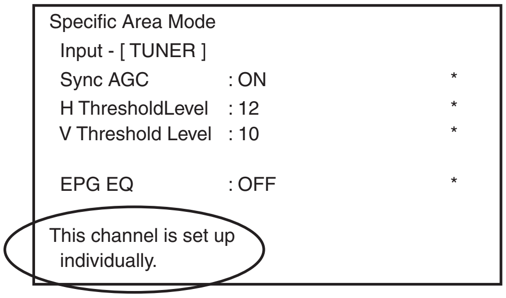
[General Setting mode screen]



```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H ThresholdLevel  : 12          *
  V Threshold Level : 10          *

 EPG EQ             : OFF         *
```

*: Setting is the default.

[Display in General Setting mode when the channel currently displayed has specific settings]



```
Specific Area Mode
  Input - [ TUNER ]
  Sync AGC          : ON          *
  H ThresholdLevel  : 12          *
  V Threshold Level : 10          *

  EPG EQ            : OFF         *

This channel is set up
  individually.
```

[Tips]

- General Setting mode can be entered only during recording/playback stop.
- The currently selected input mode (TUNER or LINE) is displayed for "Input."
- If L1, L2, L3, or DV is selected for input, general settings for the line input can be made (DV is not valid for specific-area settings), and if TUNER is selected, general settings for the tuner input can be made.

Table 1: key operations in specific-Area setting mode (1/2)

Key operations in Specific Area Setting mode of the remote control units are shown in the table below (the keys are of the remote control unit for servicing unless otherwise stated):

Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[DIG/ANA]	Switches General setting mode and Specific setting mode.	–	–	○	○
[INPUT SELECT], [CHANNEL +/-] (Remote control unit supplied with this unit)	Switches inputs or channels.	–	–	○	○
[SIDE A] , [SIDE B]	Sets SyncAGC.	ON(*) / OFF	ON : The sync level is set to an appropriate value. OFF : Cancel the Sync AGC.	○	○
[Rev ×3], [×3 Fwd]	Sets H Threshold.	0 – 15 (Default : 12)	[Rev ×3] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [×3 Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○
[Rev CHAPTER SKIP] [CHAPTER SKIP Fwd]	Sets V Threshold Level.	0 – 15 (Default : 10)	[Rev CHAPTER SKIP] : Decreasing 1 by 1 in the range 0 to 15. (Cyclic operation) [CHAPTER SKIP Fwd] : Increasing 1 by 1 in the range 0 to 15. (Cyclic operation)	○	○

Table 1: key operations in specific-Area setting mode (2/2)

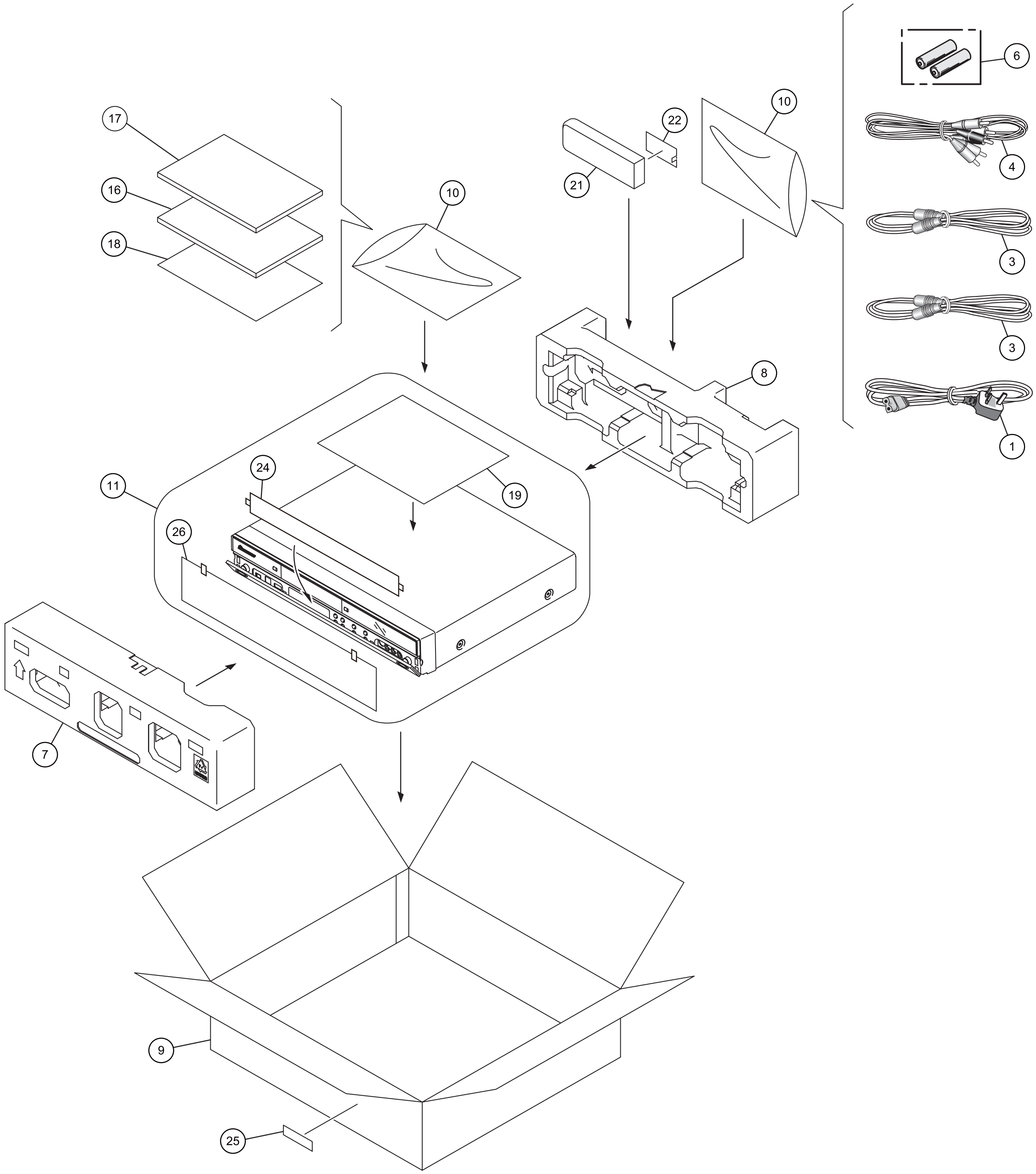
Key	Operation	Switching (*: Default)	Remarks	Used in Specific-Channel Setting mode	Used in General Setting mode
[PLAY]	All channels that have specific setting data will be canceled, and the specific data will be initialized.	–	The General Setting data will not be changed.	○	×
[CLEAR]	Specific-Channel Setting mode: If the currently selected channel has its specific setting, that setting will be canceled. (By canceling the specific setting for that channel, the number of remaining channels that can have specific settings will be increased by one.) General Setting mode: Settings of General Setting mode are initialized.	–	Specific-Channel Setting mode: All specific data are initialized. The General Setting data will not be changed. General Setting mode: All general setting data are reset to default. The specific setting data will not be changed (will be retained).	○	○
[PAUSE]	The specific-channel-setting data for the currently selected channel are reset to default.	–	The General Setting data will not be changed (will be retained).	○	×
[ESC]	To quit Setting mode for a specific area and clear the on-screen display.	–	–	○	○

Notes:
- Each key listed in Table 1 above is active only while the tuner is completely stopped.
- The setting values will not be reset to default even if resetting to the state at the time of shipment is performed.

9. EXPLODED VIEWS AND PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *Screws adjacent to ▼ mark on product are used for disassembly.*
- *For the applying amount of lubricants or glue, follow the instructions in this manual. (In the case of no amount instructions, apply as you think it appropriate.)*

9.1 PACKING



(1) PACKING SECTION PARTS LIST

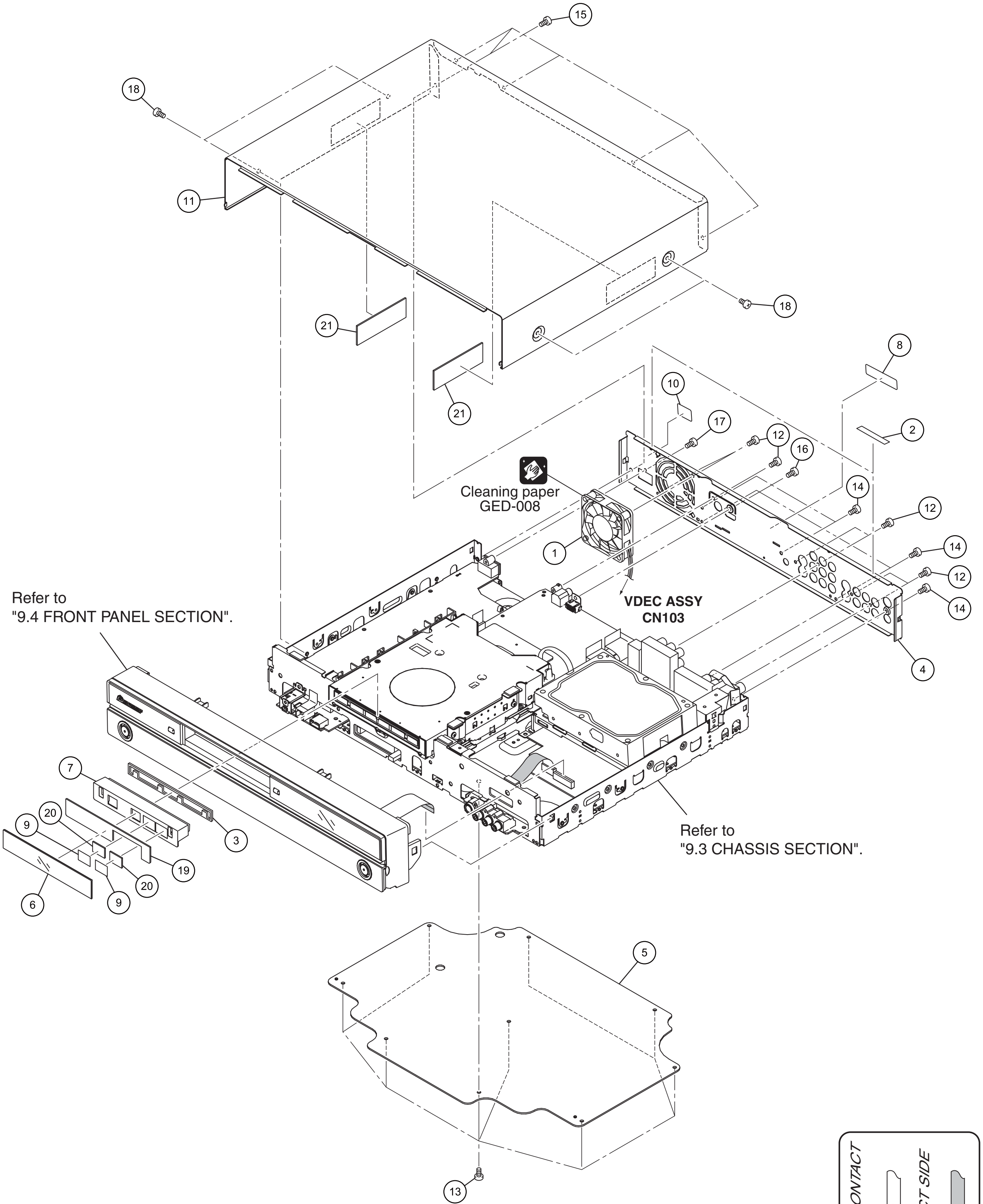
Mark	No.	Description	Part No.
⚠	1	Power Cable	See Contrast table (2)
	2	. . . .	
	3	RF Antenna Cable	See Contrast table (2)
	4	Audio Video Cable (1.5m) (red/white/yellow)	VDE1077
	5	. . . .	
NSP	6	Dry Cell Batteries (AA/R6P)	VEM1010
	7	Front Pad	VHA1435
	8	Rear Pad	VHA1436
	9	Packing Case	See Contrast table (2)
	10	Polyethylene Bag	VHL1088
	11	Mirror Sheet	VHL1095
	12	. . . .	
	13	. . . .	
	14	. . . .	
	15	. . . .	
	16	Oprating Instructions (Trad-Chinese)	VRC1433
	17	Oprating Instructions (English)	VRB1477
	18	HDD Caution 8L	VRR1071
	19	HDD Caution 8L B	VRR1076
	20	. . . .	
	21	Remote Control	VXX3267
	22	Battery Cover	AZA7424
	23	. . . .	
	24	Nonwoven Cloth Sheet	VHL1110
NSP	25	Selial Label S	VRW2188
	26	Nonwoven Cloth Cover	VHL1116

(2) CONTRAST TABLE

DVR-LX70/TLXV and DVR-LX70/TFXV are constructed the same except for the following:

Mark	No.	Symbol and Description	DVR-LX70/ TLXV	DVR-LX70/ TFXV
⚠	1	Power Cable	ADG1127	ADG7097
	3	RF Antenna Cable	VDE1075	VDE1088
	9	Packing Case	VHG2848	VHG2849

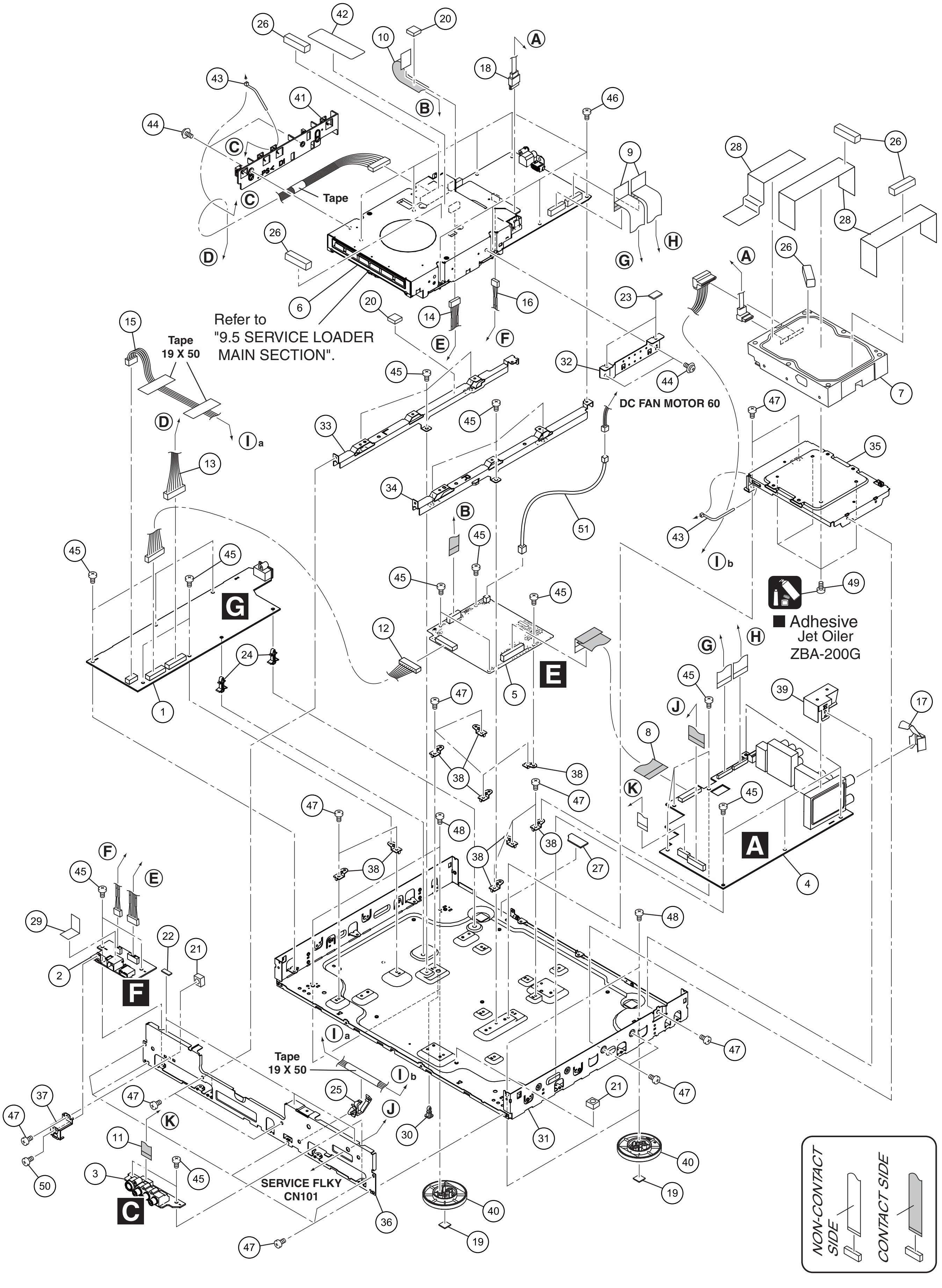
9.2 EXTERIOR SECTION



(1) EXTERIOR SECTION PARTS LIST

Mark	No.	Description	Part No.
⚠	1	DC Fan Moror 60	VXM1123
	2	Cushion	VEB1401
	3	Tray Sheet	VEC2576
NSP	4	Rear Panel (TLXV type)	VNA3049
NSP	4	Rear Panel (TFXV type)	VNA3050
NSP	5	Layer Panel	VNE2485
	6	Traypanel Lens	VNK6286
	7	Traypanel Base	VNK6287
NSP	8	Serial Label S	VRW2188
	9	Hologram Label	VRW2170
NSP	10	ID Label	VXW1015
	11	Bonnet Case S	VXX3265
	12	Screw	BPZ30P080FCC
	13	Screw	BSR30P060FTC
	14	Screw	BSZ30P040FCC
	15	Screw	BSZ30P060FCC
	16	Screw	PCZ30P060FCC
	17	Screw	PPZ30P080FCC
	18	Screw	VBA1112
	19	Spacer T	VEC2585
	20	Spacer H	VEC2586
	21	Spacer B	VEC2587

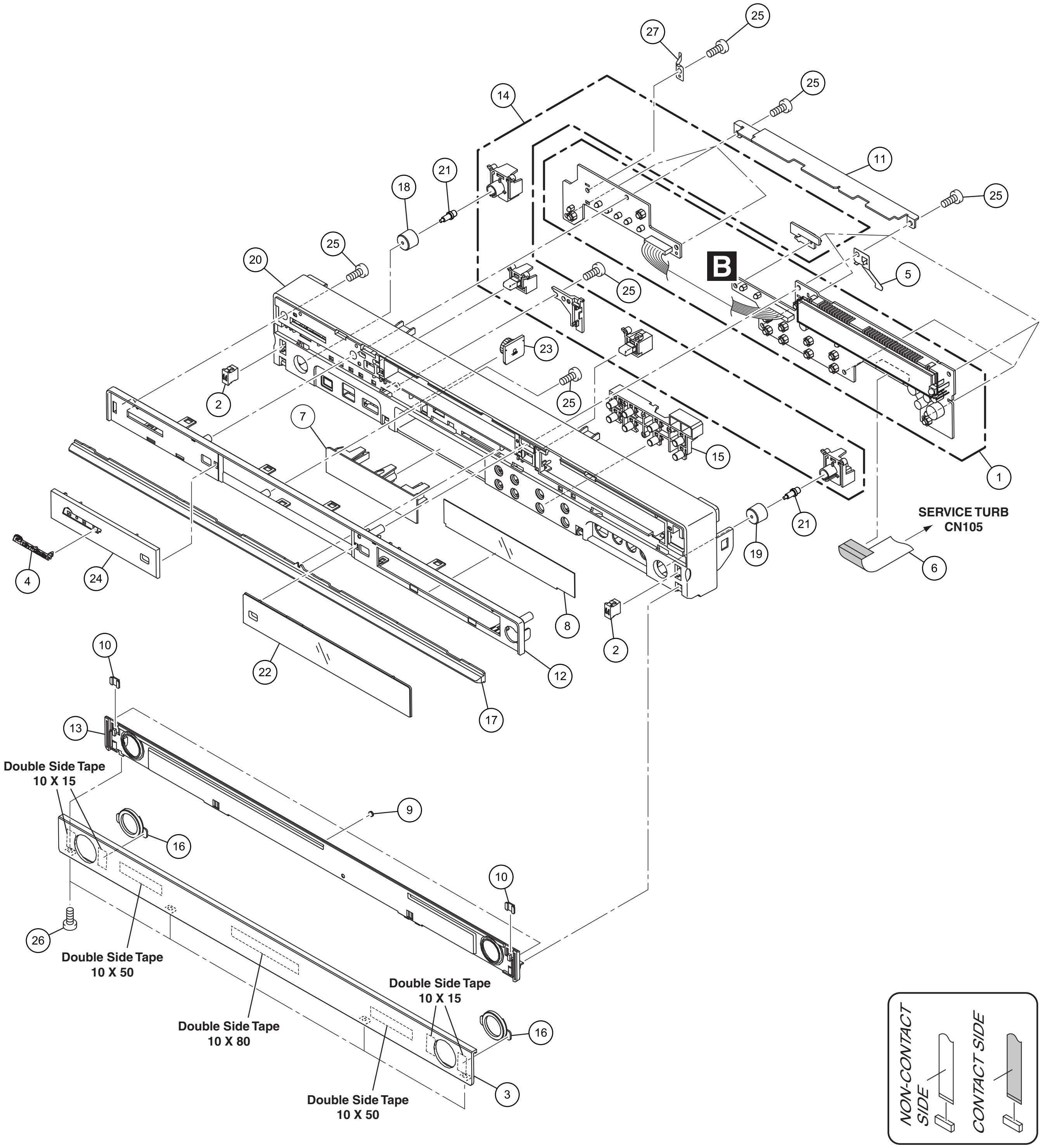
9.3 CHASSIS SECTION



(1) CHASSIS SECTION PARTS LIST

Mark	No.	Description	Part No.
⚠	1	POWER SUPPLY Assy	VWR1412
	2	DVUB Assy	VWV2324
	3	SERVICE FRJB Assy	VXX3271
	4	SERVICE TURB Assy (TLXV type)	VXX3273
	4	SERVICE TURB Assy (TFXV type)	VXX3274
	5	VDEC Assy	VWV2331
NSP	6	Service Loader Main	VXU1012
	7	HDD 500G ST3500830SS	VXF1155
	8	Flexible Cable (24P)	VDA2168
	9	Flexible Cable (22P)	VDA2176
	10	Flexible Cable (30P)	VDA2177
	11	Flexible Cable (11P)	VDA2178
	12	Connector Assy	PF12PP-S15
	13	Connector Assy	PF13PP-S17
	14	Housing Assy (10P)	VKP2391
	15	Housing Assy (4P)	VKP2399
	16	Housing Assy (6P)	VKP2400
	17	Earth Plate TU	VBK1173
	18	SATA Cable	VDX1018
	19	Rubber Foot	VEB1349
	20	Rubber Spacer	VEB1398
	21	Screw Guard	VEB1399
	22	Cushion	VEB1402
	23	Cushion B	VEB1406
	24	PCB Support	VEC2184
NSP	25	Clamp	VEC2418
	26	Gasket 30*10T	VEC2522
	27	Spacer	VEC2584
	28	Aluminum Tape 180*25	VEF1065
	29	Aluminum Tape 13*25	VEF1068
	30	Rocking Spacer	VEC2578
NSP	31	Base Chassis	VNB1063
NSP	32	Upper Stay	VNE2467
NSP	33	Writer Stay L	VNE2468
NSP	34	Writer Stay R	VNE2469
NSP	35	HDD Stay	VNE2470
NSP	36	Front Stay	VNE2472
	37	DV Angle	VNE2474
NSP	38	PCB Base	VNE2477
	39	AT Shield	VNF1141
	40	Insulator H.S.	VNK6329
	41	Cord Holder	VNL1971
	42	Laser Caution Label	VRW2262
NSP	43	Binder (BK-1)	ZCA-BK1
	44	Screw	AMZ30P060FTC
	45	Screw	BSR30P060FTC
	46	Screw	BSR30P080FTB
	47	Screw	BSZ30P040FTC
	48	Screw	BPZ30P080FTC
	49	#6-32 Screw	DBA1125
	50	Screw	VBA1088
	51	Housing Assy (2P)	VKP2403

9.4 FRONT PANEL SECTION



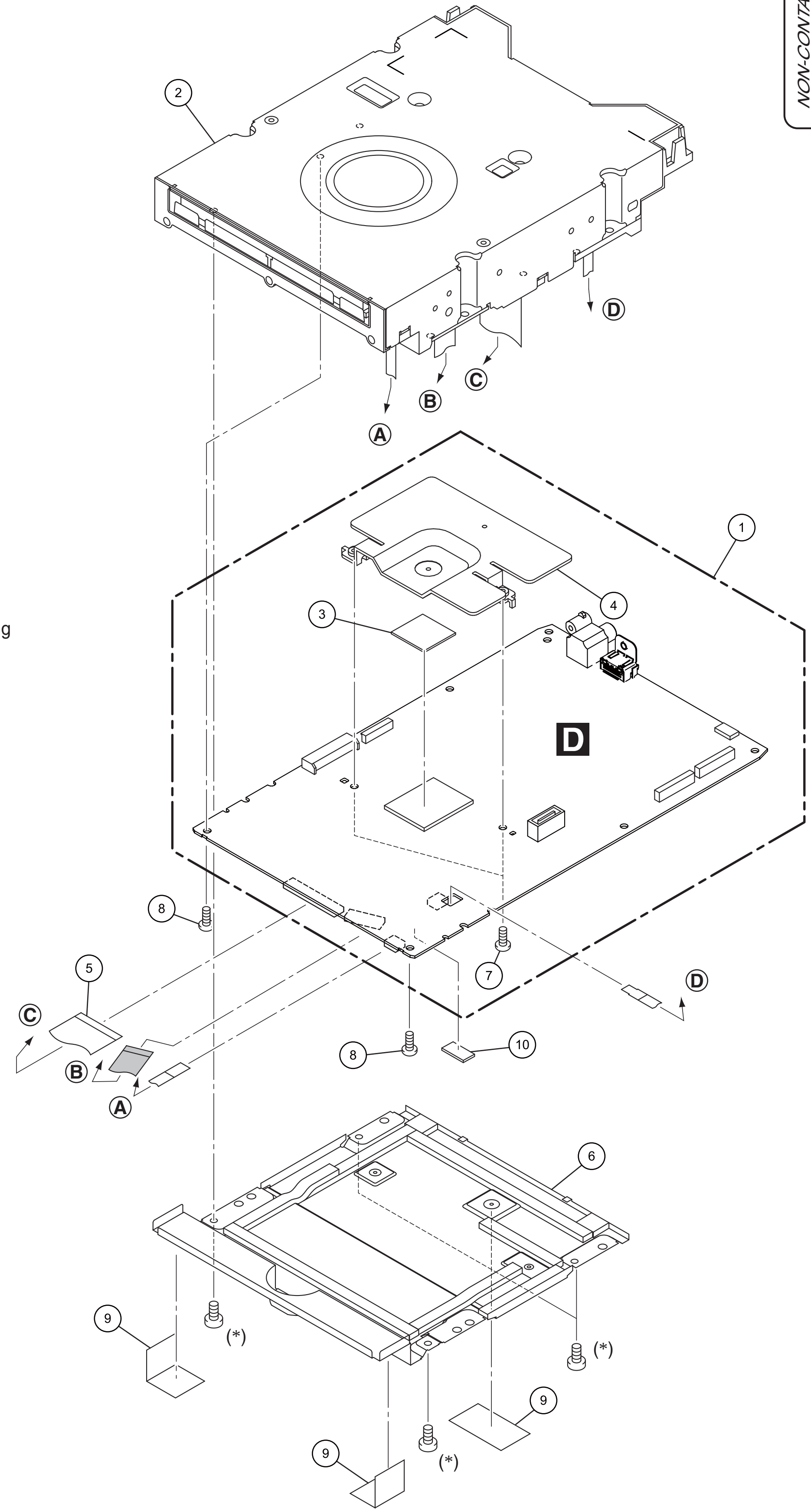
(1) FRONT PANEL SECTION PARTS LIST

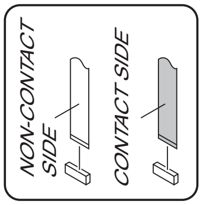
Mark	No.	Description	Part No.
	1	SERVICE FLKY Assy	VXX3269
	2	Magnet Holder Assy	AEC1077
	3	Door Panel	VAH1450
	4	PIONEER Badge	VAM1158
	5	Earth Plate FLKY	VBK1176
	6	Flexible Cable (19P)	VDA2179
	7	CI Cover	VNK6229
	8	FL Filter	VEC2544
	9	Door Pad	VEC2562
	10	Magnet Catcher B	VNE2482
	11	FP Bridge	VNE2464
	12	Panel Frame	VNK6149
	13	Door Base	VNK6161
	14	Main Key	VNK6162
	15	Function Key	VNK6164
	16	Door Ring	VNK6165
	17	Center Lens	VNK6168
	18	Key Top PW	VNK6289
	19	Key Top REC	VNK6302
	20	Front Panel	VNK6307
	21	LED Lens	VNK6290
	22	FL Lens	VNK6317
	23	Damper Assy	VXA2858
	24	Sub Panel	VNK6326
	25	Screw	BPZ30P080FTC
	26	Flat Head Screw	VBA1113
	27	Earth Plate TU	VBK1179

9.5 SERVICE LOADER MAIN SECTION

Reuse (*) marked
parts when exachanging
Service LOADER
Assy.

- Case Screw S
  (DBA1250) x2





SERVICE LOADER MAIN SECTION PARTS LIST

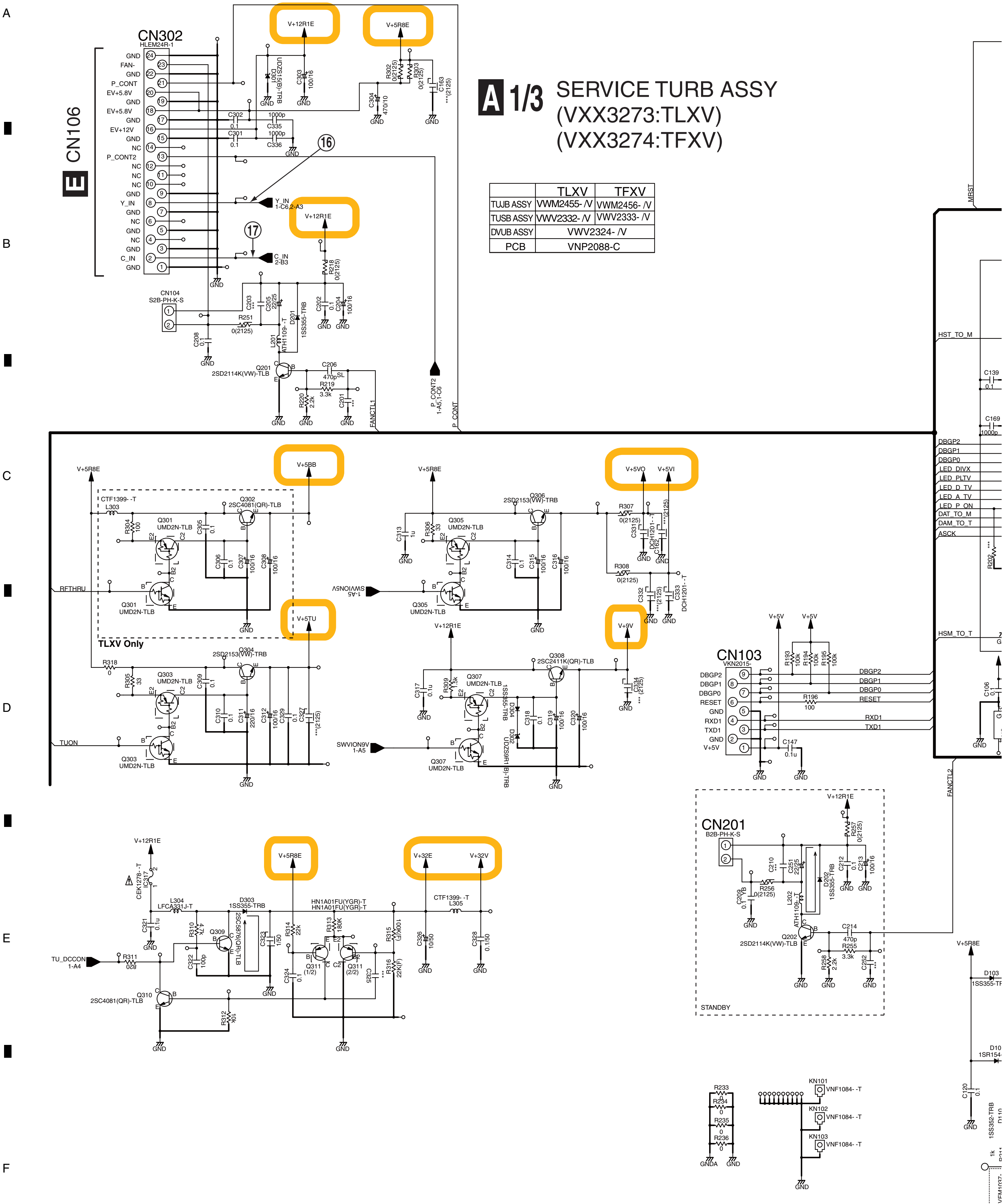
Mark	No.	Description	Part No.
	1	SERVICE MAIN Assy	VXX3268
	2	Service Loader Assy	VXX3239
	3	Radiation Sheet (Silicon)	VEB1360
	4	Heatsink	VNH1079
	5	FFC U11	DDX1208
	6	Low Case U11	DNC1761
	7	Screw	BBZ30P060FTC
	8	Screw	DBA1220
NSP	9	Tape	• • • • •
	10	Silicon Sheet R9B	DEB1726

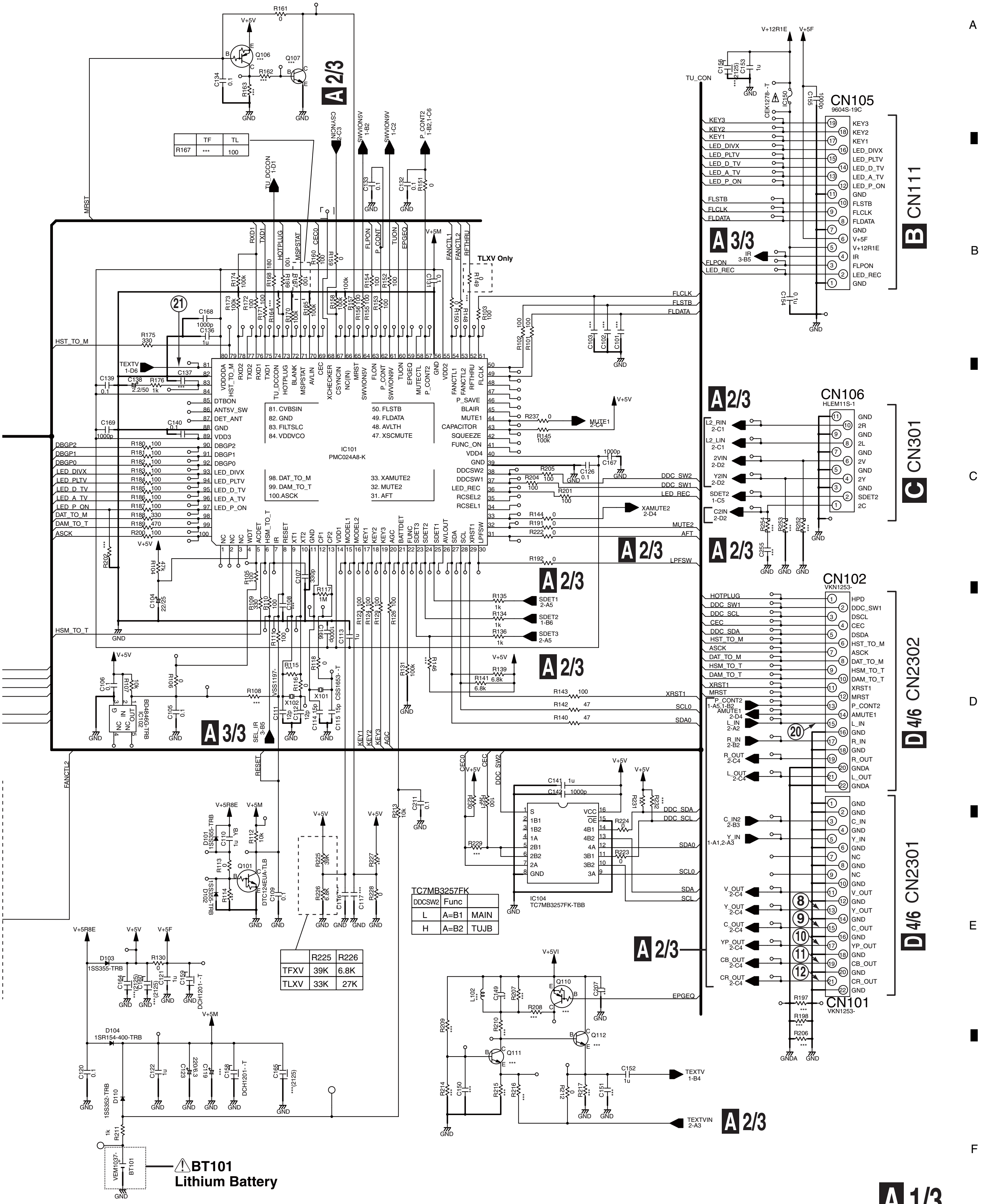
10. SCHEMATIC DIAGRAM

10.1 SERVICE TURB ASSY (1/3)

A 1/3 SERVICE TURB ASSY
(VXX3273:TLXV)
(VXX3274:TFXV)

	TLXV	TFXV
TUJB ASSY	VWM2455- /V	VWM2456- /V
TUSB ASSY	VWV2332- /V	VWV2333- /V
DVUB ASSY	VWV2324- /V	
PCB	VNP2088-C	





	TF	TL
R167	***	100

TC7MB3257FK

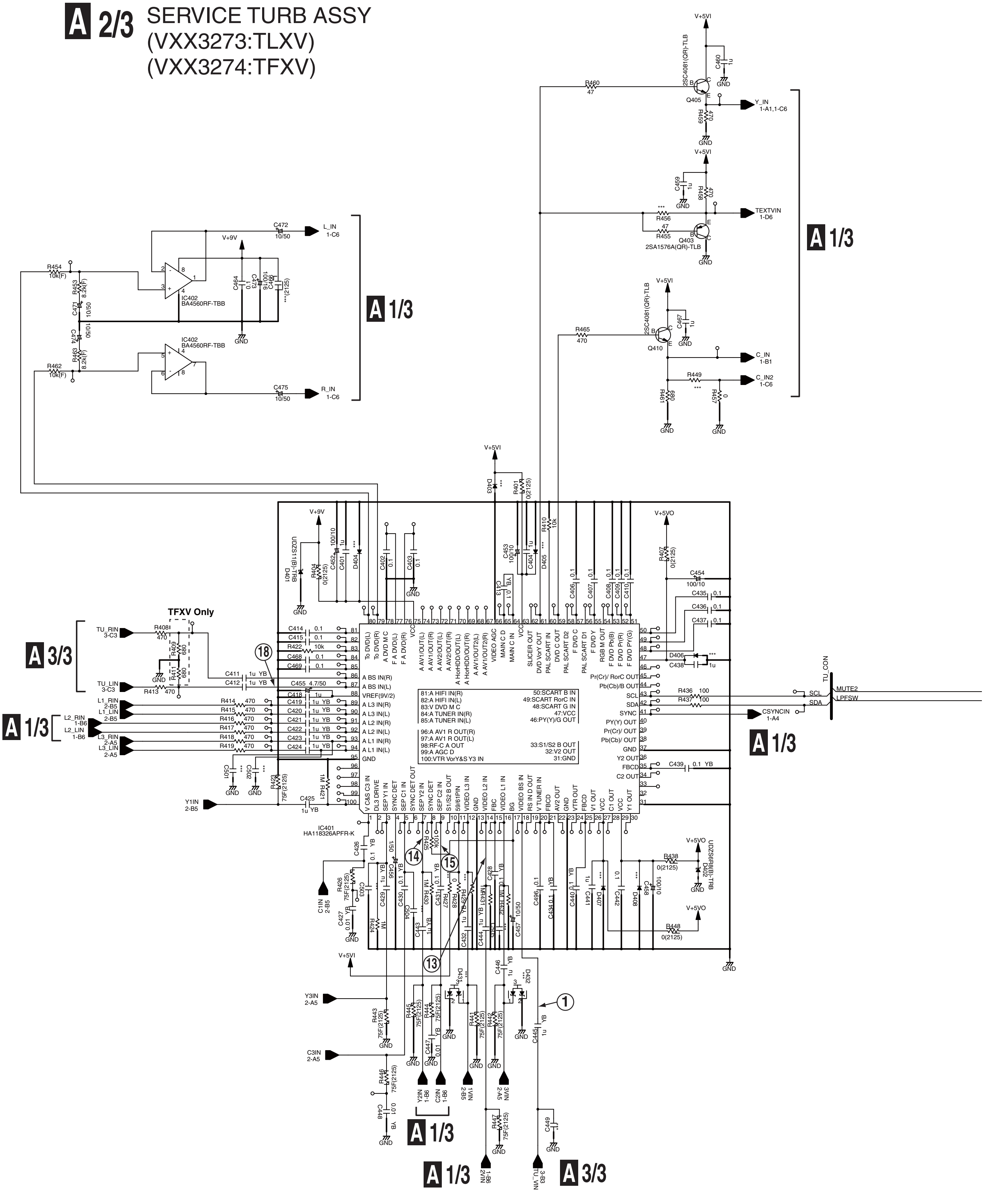
DDCSW2	Func	
L	A=B1	MAIN
H	A=B2	TUJB

	R225	R226
TFXV	39K	6.8K
TLXV	33K	27K

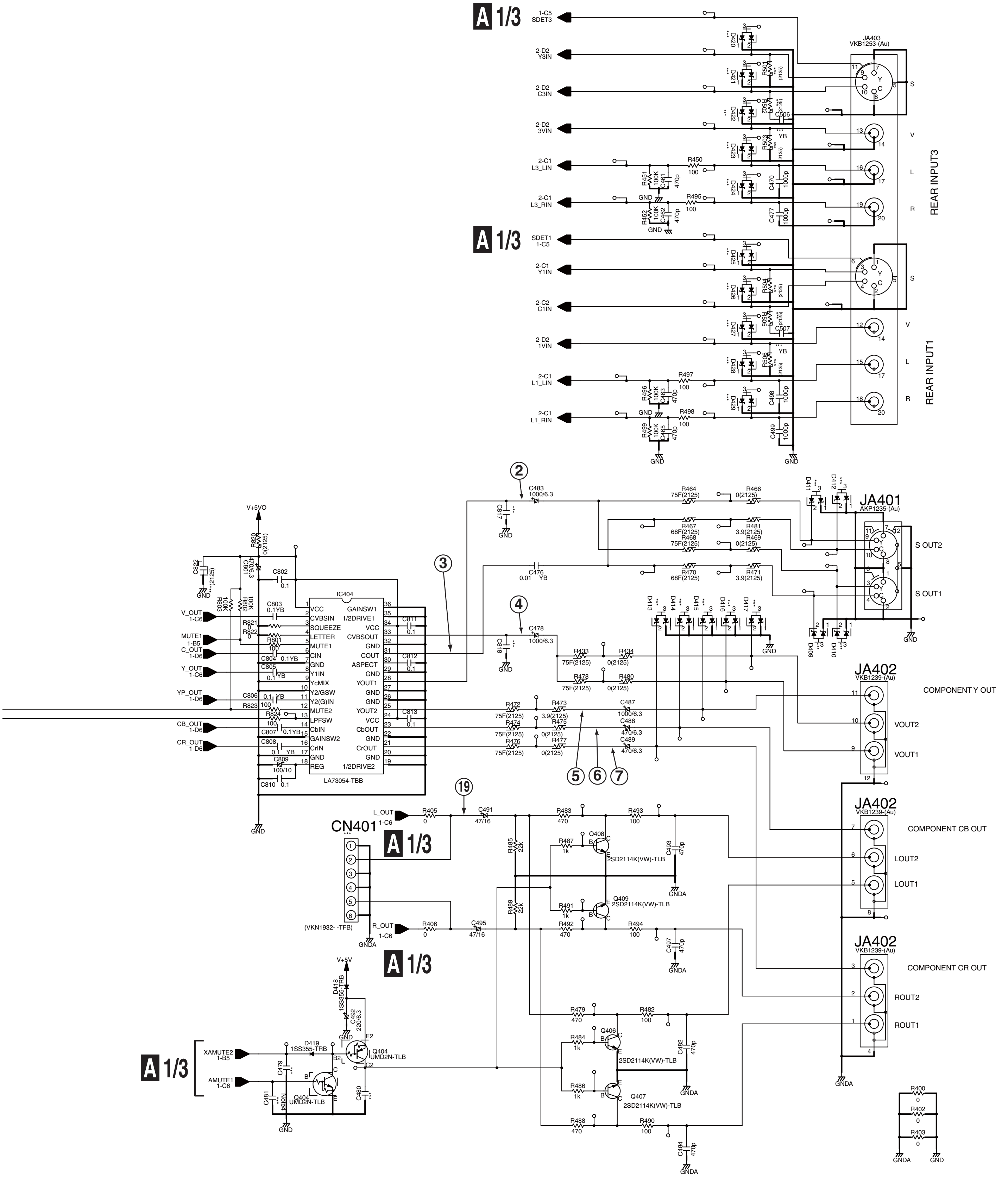
A 1/3

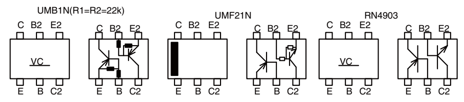
10.2 SERVICE TURB ASSY (2/3)

A 2/3 SERVICE TURB ASSY
(VXX3273:TLXV)
(VXX3274:TFXV)



A 2/3


A 1/3
1-C5 SDET3
2-D2 Y3IN
2-D2 C3IN
2-D2 3VIN
2-C1 L3_LIN
2-C1 L3_RIN
JA403 VKB1253-(Au)
REAR INPUT3
R450 100
R495 100
R451 100K
R452 100K
C461 470p
C462 470p
C470 1000p
C477 1000p
C506 YB
D420 D421 D422 D423 D424
R501 R502 R503 (2125)
A 1/3
SDET1 1-C5
2-C1 Y1IN
2-C2 C1IN
2-D2 1VIN
2-C1 L1_LIN
2-C1 L1_RIN
REAR INPUT1
R497 100
R498 100
R496 100K
R499 100K
C463 470p
C465 470p
C498 1000p
C499 1000p
C507 YB
D425 D426 D427 D428 D429
R504 R505 R506 (2125)
S V L R
GND
②
C483 1000/6.3
C817
R464 75F(2125)
R466 0(2125)
R467 68F(2125)
R481 3.9(2125)
R468 75F(2125)
R469 0(2125)
R470 68F(2125)
R471 3.9(2125)
C476 0.01 YB
D411 D412
JA401 AKP1235-(Au)
S OUT2
S OUT1
D409 D410
③
④
C478 1000/6.3
C818
D413 D414 D415 D416 D417
V+5VO
R820 0(2125)
C822 (2125)
C801 470/6.3
C802 0.1
IC404
LA73054-TBB
VCC CVBSIN SQUEEZE LETTER MUTE1 CIN GND Y1IN YcMIX Y2/GSW Y2(G)IN MUTE2 LPFSW CbIN GAINSW2 CrIN GND REG
GAINSW1 1/2DRIVE1 VCC CVBSOUT GND COUT ASPECT GND YOUT1 GND GND YOUT2 VCC CbOUT GND CrOUT GND 1/2DRIVE2
V_OUT 1-C6
MUTE1 1-B5
C_OUT 1-D6
Y_OUT 1-C6
YP_OUT 1-D6
CB_OUT 1-D6
CR_OUT 1-D6
R802 100K
R803 10K
C803 0.1YB
R821 R822 R801
C804 0.1YB
C805 YB 0.1
C806 0.1 YB
R823 100
R824 100
C807 0.1YB
C808 0.1 YB
C809 100/10
C810 0.1
C811 0.1
C812 0.1
C813 0.1
R433 75F(2125)
R434 0(2125)
R478 75F(2125)
R480 0(2125)
R472 75F(2125)
R473 3.9(2125)
R474 75F(2125)
R475 0(2125)
R476 75F(2125)
R477 0(2125)
C487 1000/6.3
C488 470/6.3
C489 470/6.3
⑤ ⑥ ⑦
JA402 VKB1239-(Au)
COMPONENT Y OUT
VOUT2
VOUT1
⑲
L_OUT 1-C6
R405 0
C491 47/16
R483 470
R493 100
Q408
R487 1k
R485 22k
2SD2114K(VW)-TLB
C493 470p
GNDA
Q409
R491 1k
R489 22k
2SD2114K(VW)-TLB
R_OUT 1-C6
R406 0
C495 47/16
R492 470
R494 100
C497 470p
CN401
A 1/3
(VKN1932- -TFB)
JA402 VKB1239-(Au)
COMPONENT CB OUT
LOUT2
LOUT1
JA402 VKB1239-(Au)
COMPONENT CR OUT
ROUT2
ROUT1
A 1/3
V+5V
D418 1SS355-TRB
C492 220/6.3
D419 1SS355-TRB
Q404 UMD2N-TLB
XAMUTE2 1-B5
AMUTE1 1-C6
C479
C480
C481
R490A
R479 470
R482 100
Q406
R484 1k
C482 470p
2SD2114K(VW)-TLB
R486 1k
Q407
2SD2114K(VW)-TLB
R488 470
R490 100
C484 470p
R400 0
R402 0
R403 0
GNDA GND

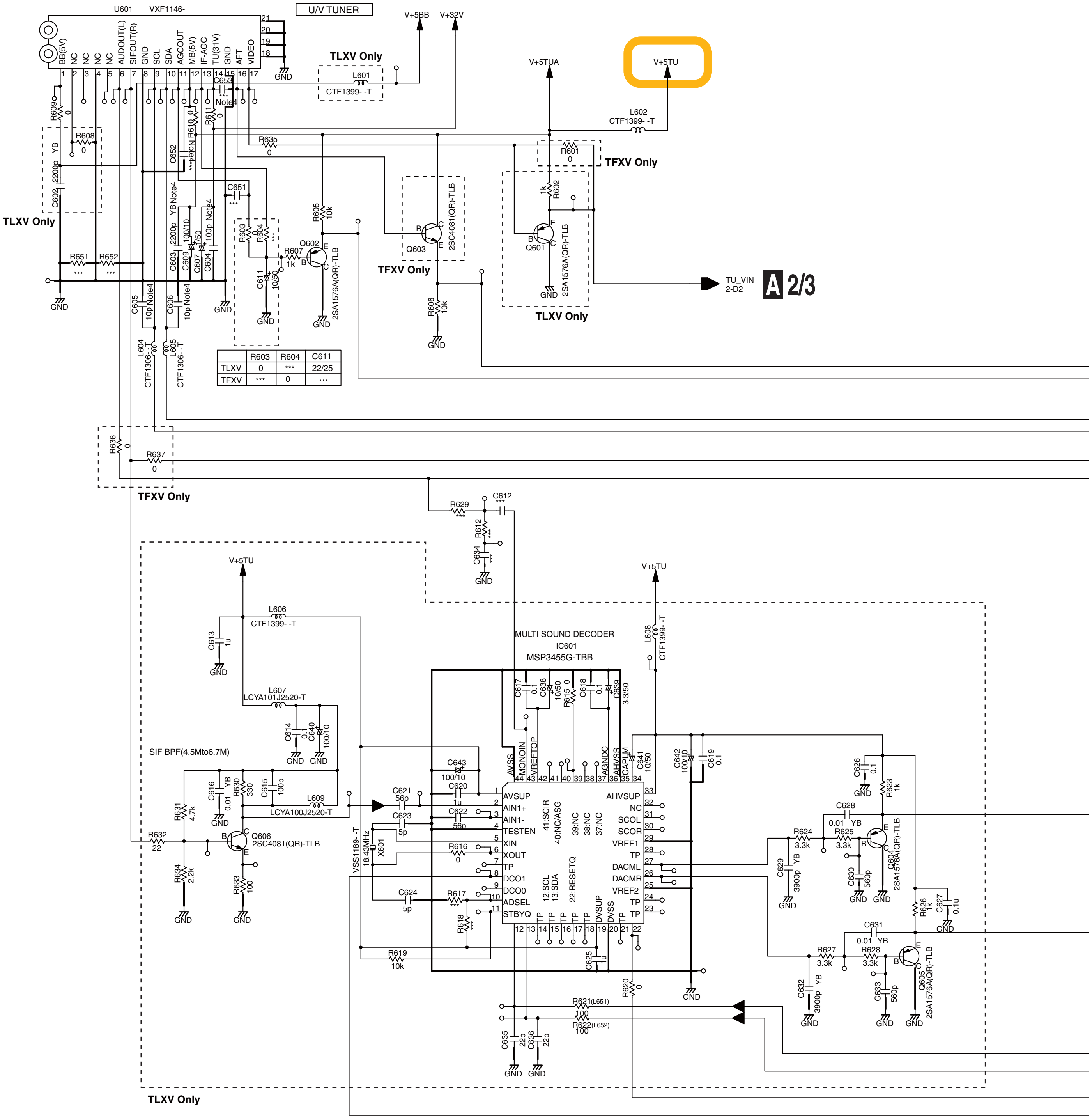

UMB1N(R1=R2=22k)
UMF21N
RN4903
C B2 E2
E B C2
VC

A 2/3

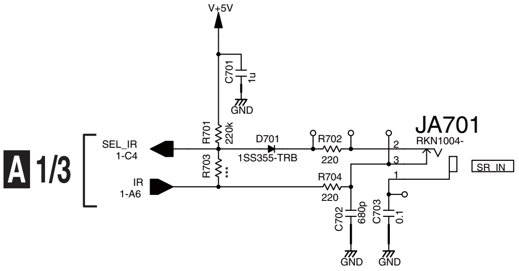
10.3 SERVICE TURB ASSY (3/3)

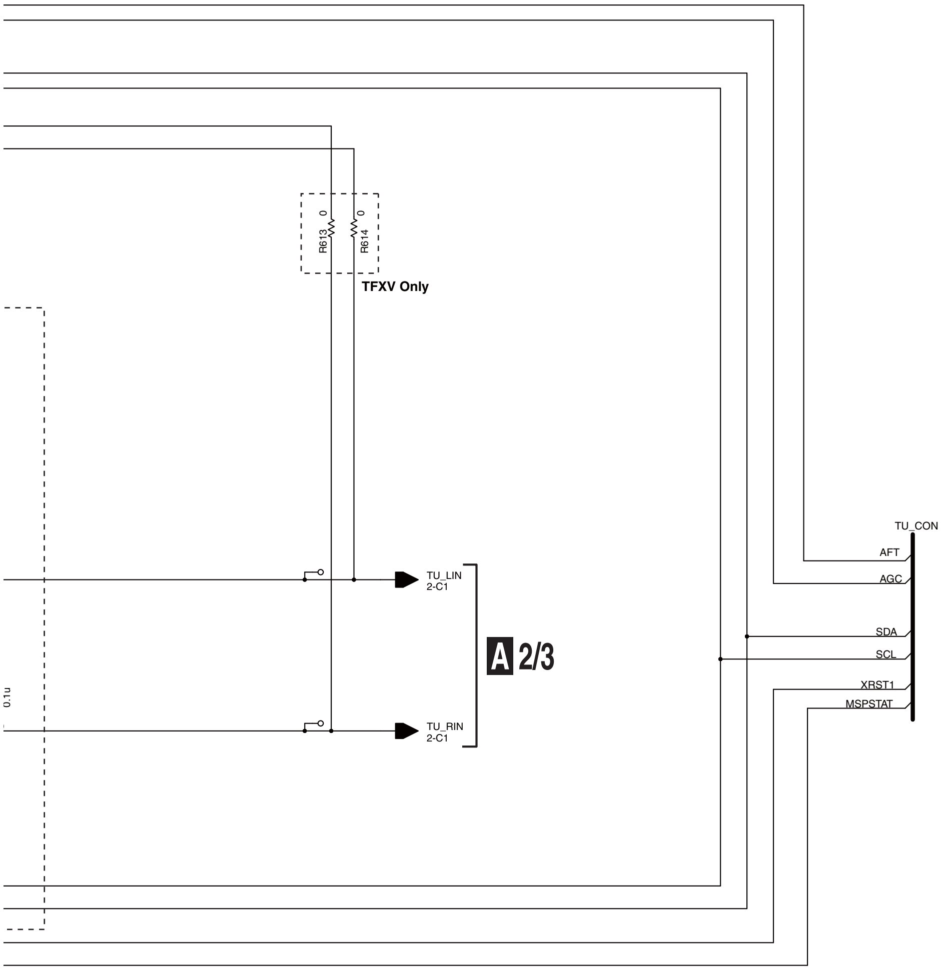
A 3/3 SERVICE TURB ASSY
(VXX3273:TLXV)
(VXX3274:TFXV)

TL : VXF1105-(VXF1061-)
TF : VXF1103-(VXF1059-)



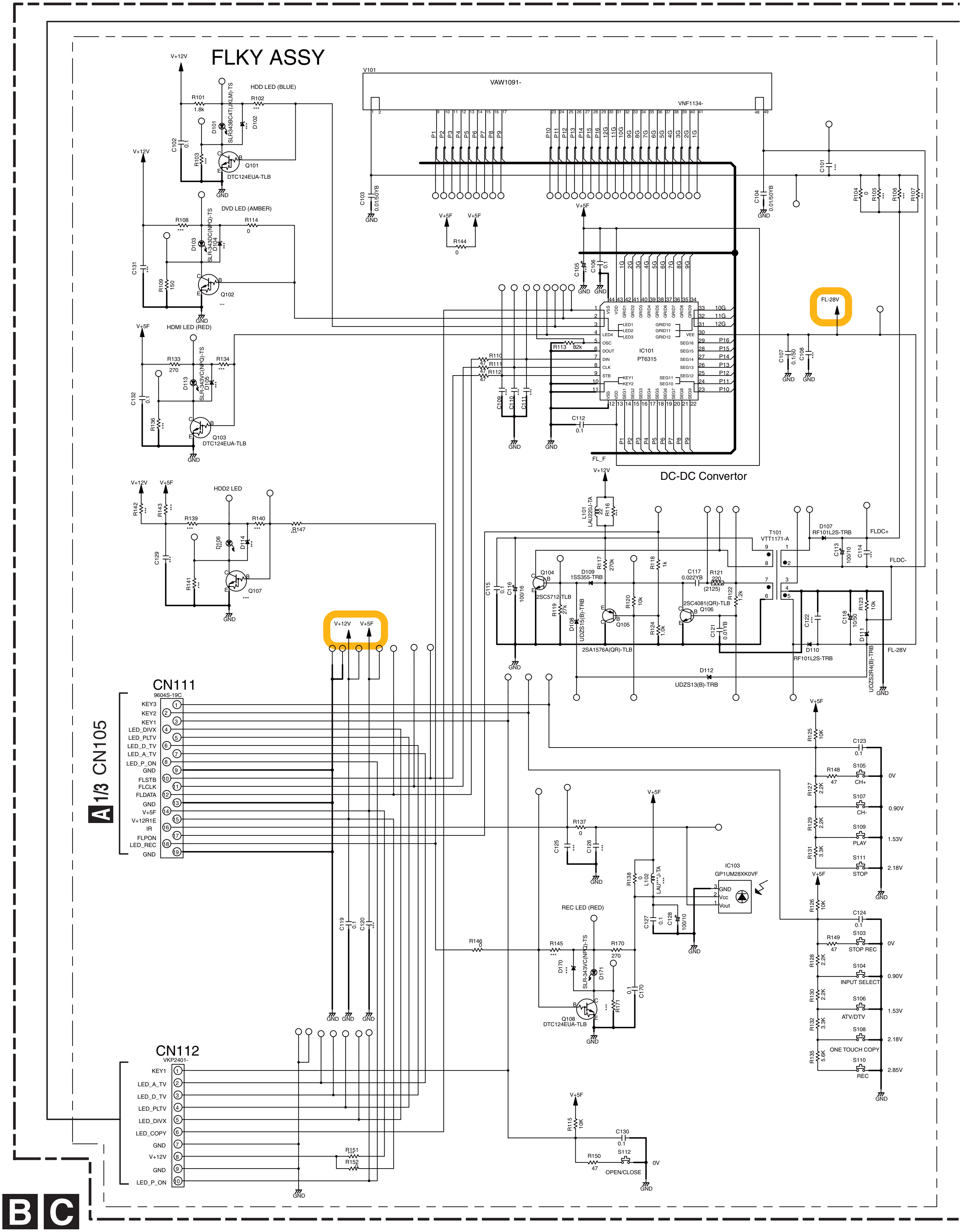
	R603	R604	C611
TLXV	0	***	22/25
TFXV	***	0	***

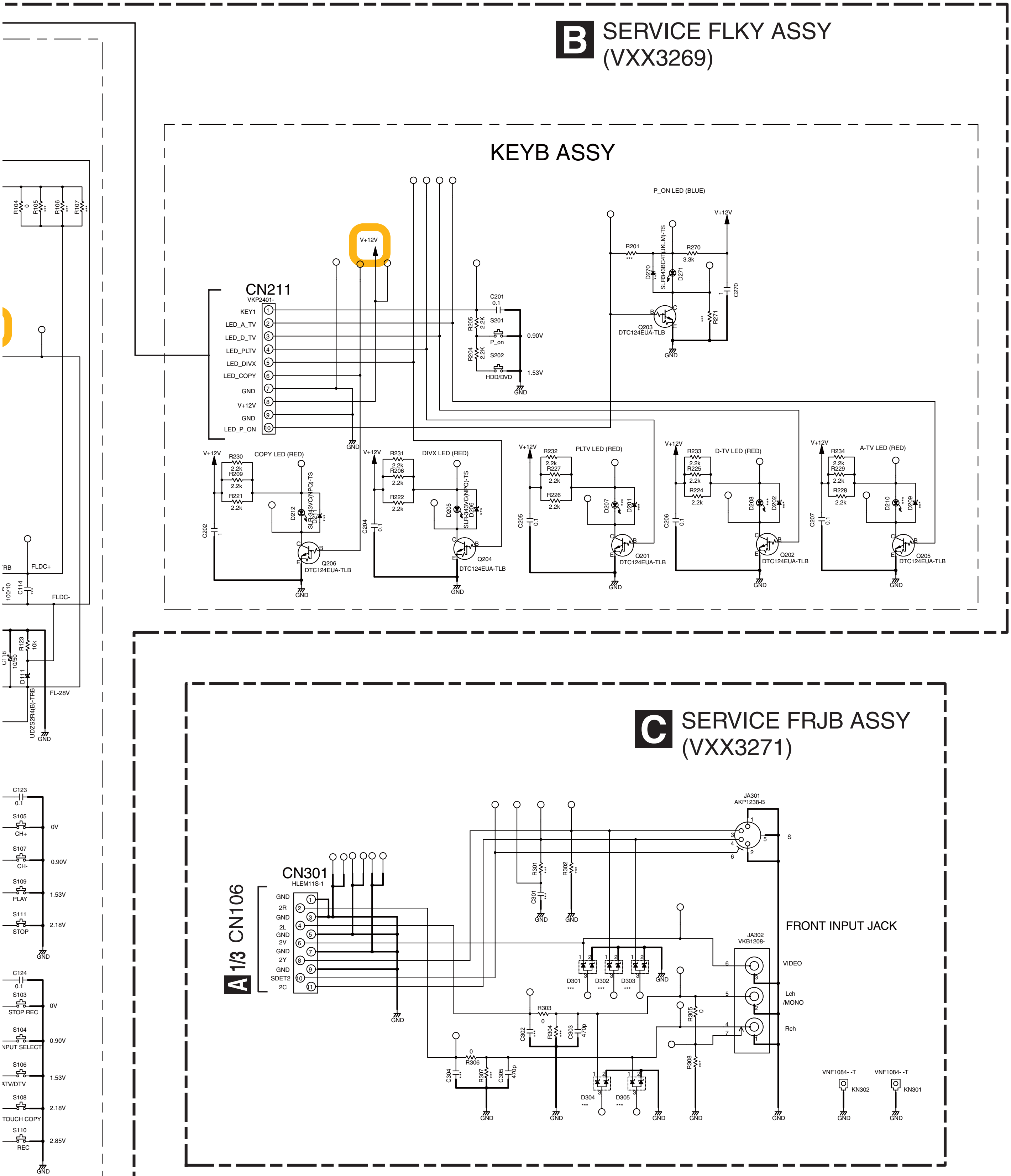

V+5V
C701
1u
GND
A 1/3
SEL_IR
1-C4
IR
1-A6
R701
220k
R703
***
D701
1SS355-TRB
R702
220
R704
220
JA701
RKN1004-
2
3
1
SR_IN
C702
680p
C703
0.1
GND
GND


R613
0
R614
0
TFXV Only
0.1u
TU_LIN
2-C1
TU_RIN
2-C1
A 2/3
TU_CON
AFT
AGC
SDA
SCL
XRST1
MSPSTAT

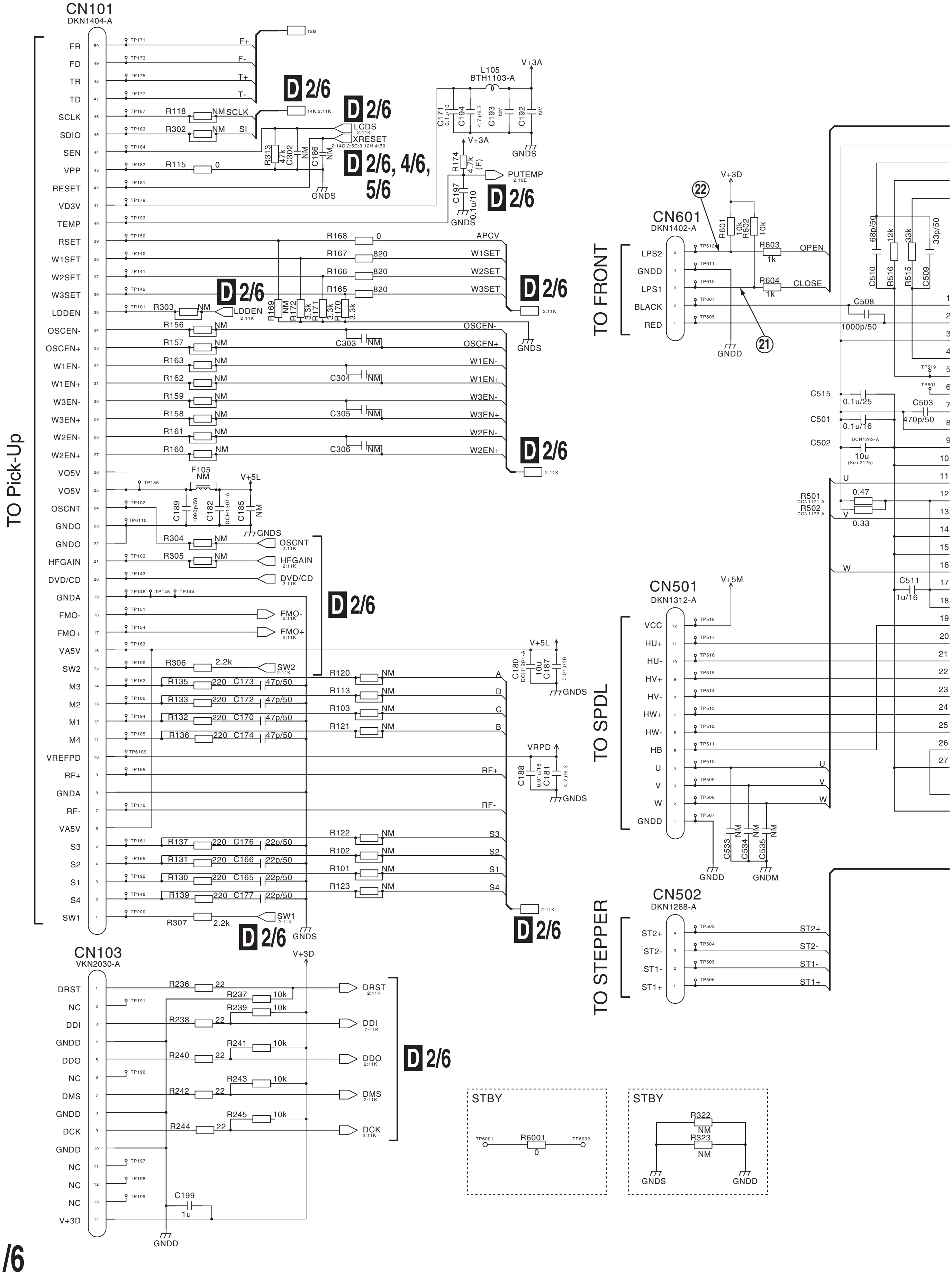
A 3/3

10.4 SERVICE FLKY and SERVICE FRJB ASSYS



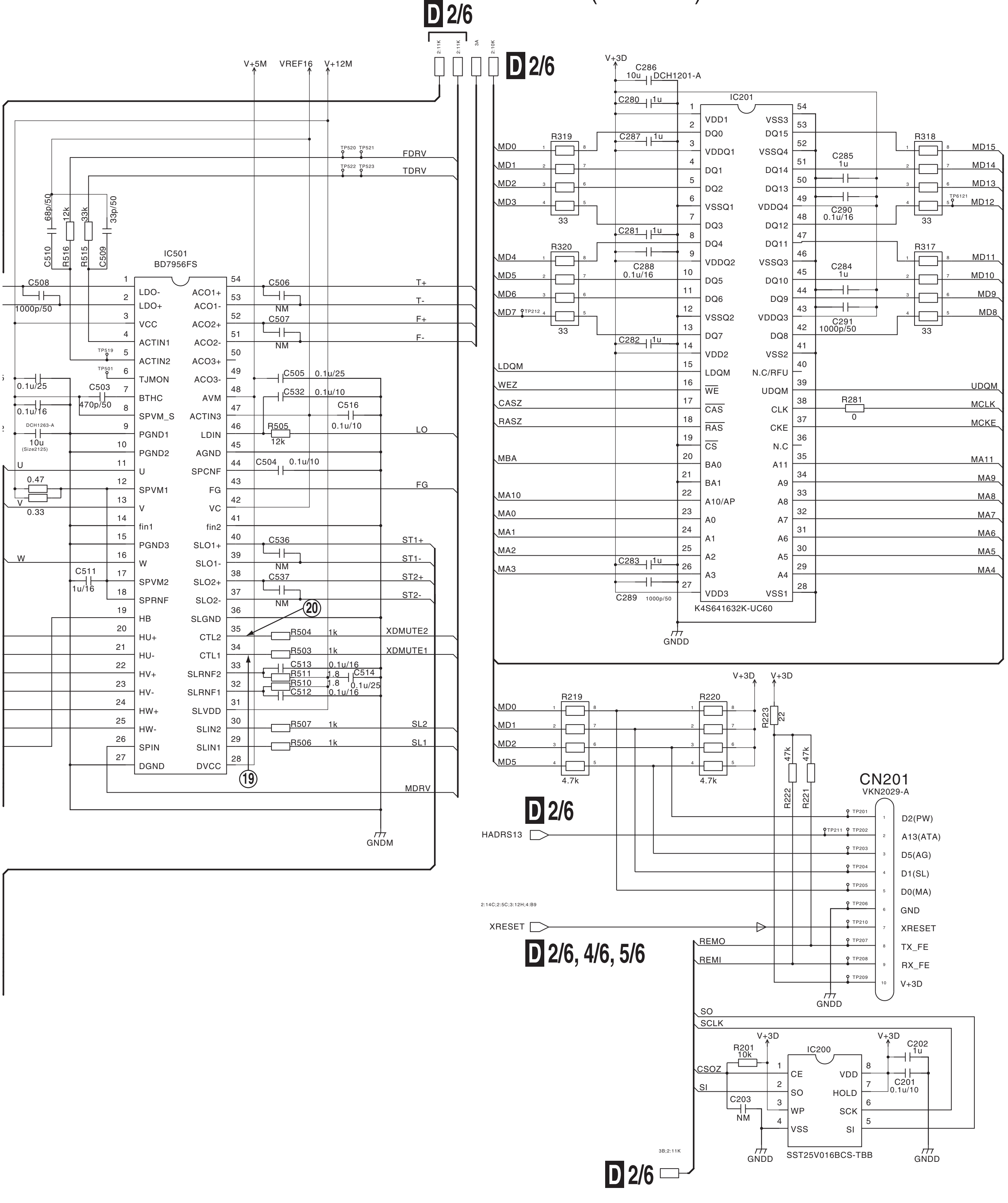

B SERVICE FLKY ASSY
(VXX3269)
KEYB ASSY
CN211
VKP2401-
KEY1
LED_A_TV
LED_D_TV
LED_PLTV
LED_DIVX
LED_COPY
GND
V+12V
GND
LED_P_ON
V+12V
C201
0.1
R205
2.2K
S201
P_on
R204
2.2K
S202
HDD/DVD
0.90V
1.53V
GND
P_ON LED (BLUE)
R201
R270
3.3k
D270
SLR343BC4T(JKLM)-TS
D271
C270
R271
Q203
DTC124EUA-TLB
COPY LED (RED)
R230
2.2k
R209
2.2k
R221
2.2k
C202
D212
SLR-343VC(NPQ)-TS
Q206
DTC124EUA-TLB
DIVX LED (RED)
R231
2.2k
R206
2.2k
R222
2.2k
C204
0.1
D205
SLR-343VC(NPQ)-TS
D206
Q204
DTC124EUA-TLB
PLTV LED (RED)
R232
2.2k
R227
2.2k
R226
2.2k
C205
0.1
D207
D201
Q201
DTC124EUA-TLB
D-TV LED (RED)
R233
2.2k
R225
2.2k
R224
2.2k
C206
0.1
D208
D202
Q202
DTC124EUA-TLB
A-TV LED (RED)
R234
2.2k
R229
2.2k
R228
2.2k
C207
0.1
D210
D209
Q205
DTC124EUA-TLB
R104
R105
R106
R107
FLDC+
FLDC-
C114
R123
10k
D111
UDZS2R4(B)-TRB
FL-28V
C123
0.1
S105
CH+
0V
S107
CH-
0.90V
S109
PLAY
1.53V
S111
STOP
2.18V
C124
0.1
S103
STOP REC
0V
S104
INPUT SELECT
0.90V
S106
ATV/DTV
1.53V
S108
TOUCH COPY
2.18V
S110
REC
2.85V
C SERVICE FRJB ASSY
(VXX3271)
A 1/3 CN106
CN301
HLEM11S-1
GND
2R
GND
2L
GND
2V
GND
2Y
GND
SDET2
2C
JA301
AKP1238-B
S
R301
R302
C301
FRONT INPUT JACK
JA302
VKB1208-
VIDEO
Lch
/MONO
Rch
D301
D302
D303
R303
0
C302
R304
C303
470p
R305
0
R306
0
C304
R307
C305
470p
D304
D305
R308
VNF1084- -T
KN302
VNF1084- -T
KN301
GND

10.5 SERVICE MAIN ASSY (1/6)

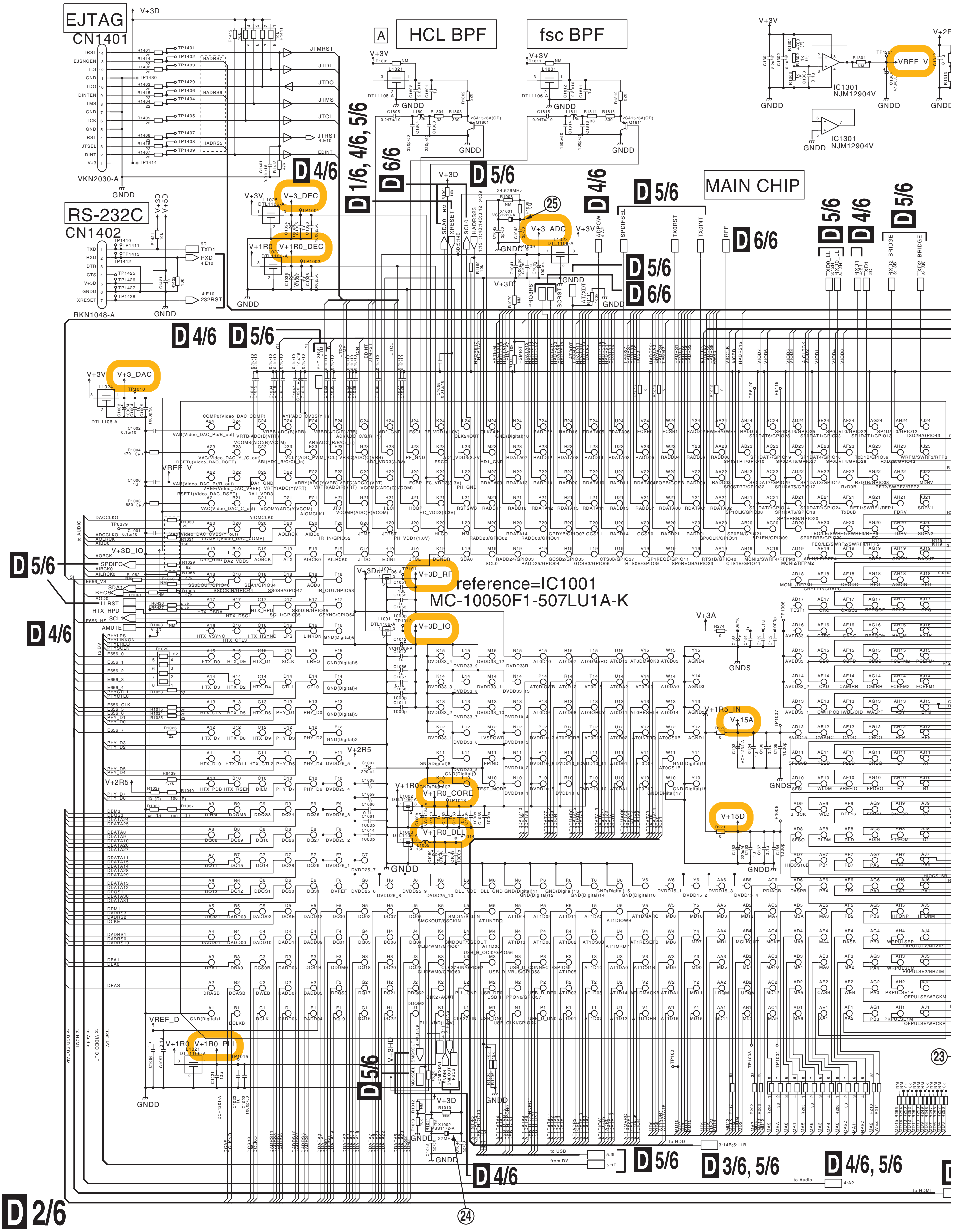


D 1/6

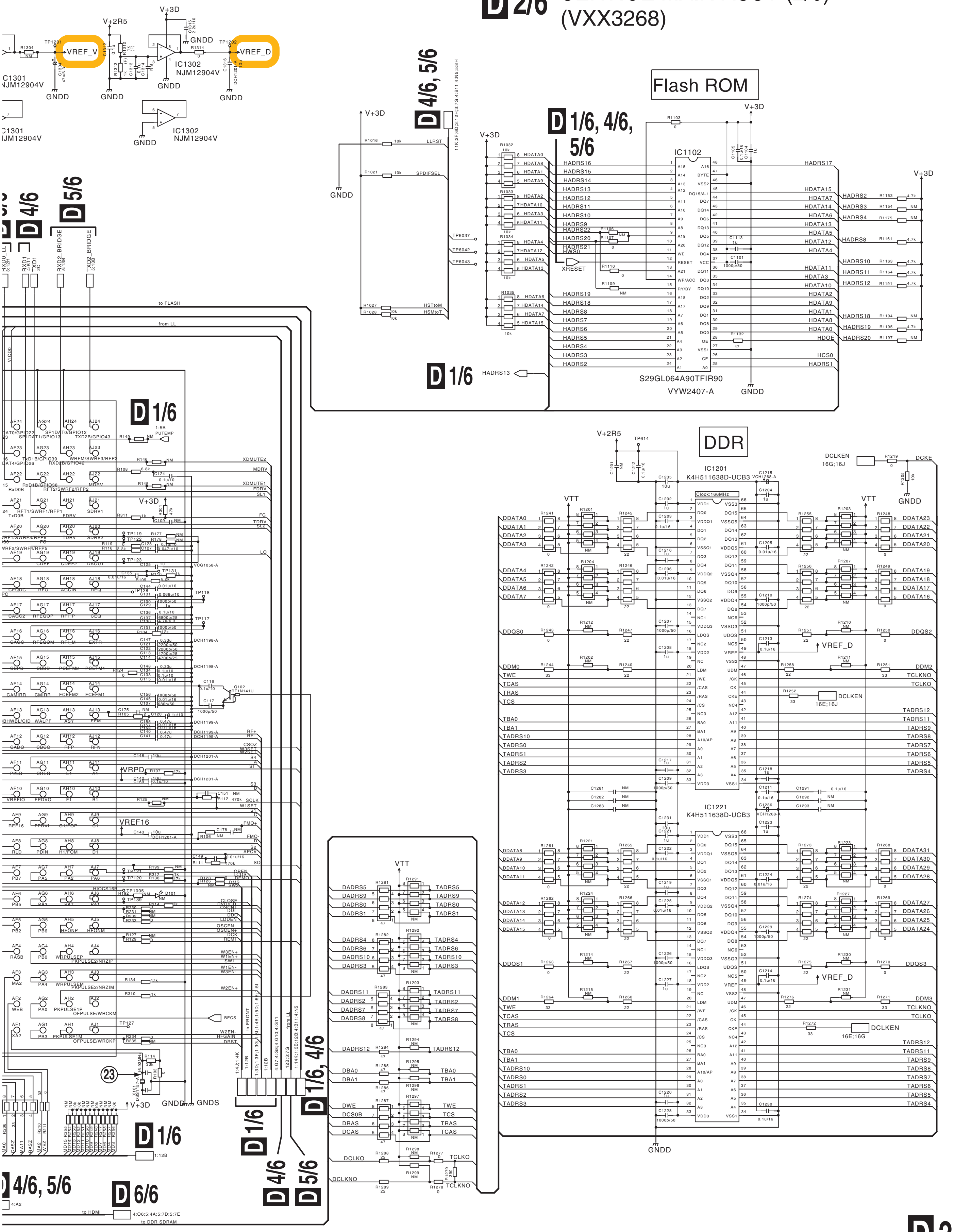
D 1/6 SERVICE MAIN ASSY (1/6)
(VXX3268)



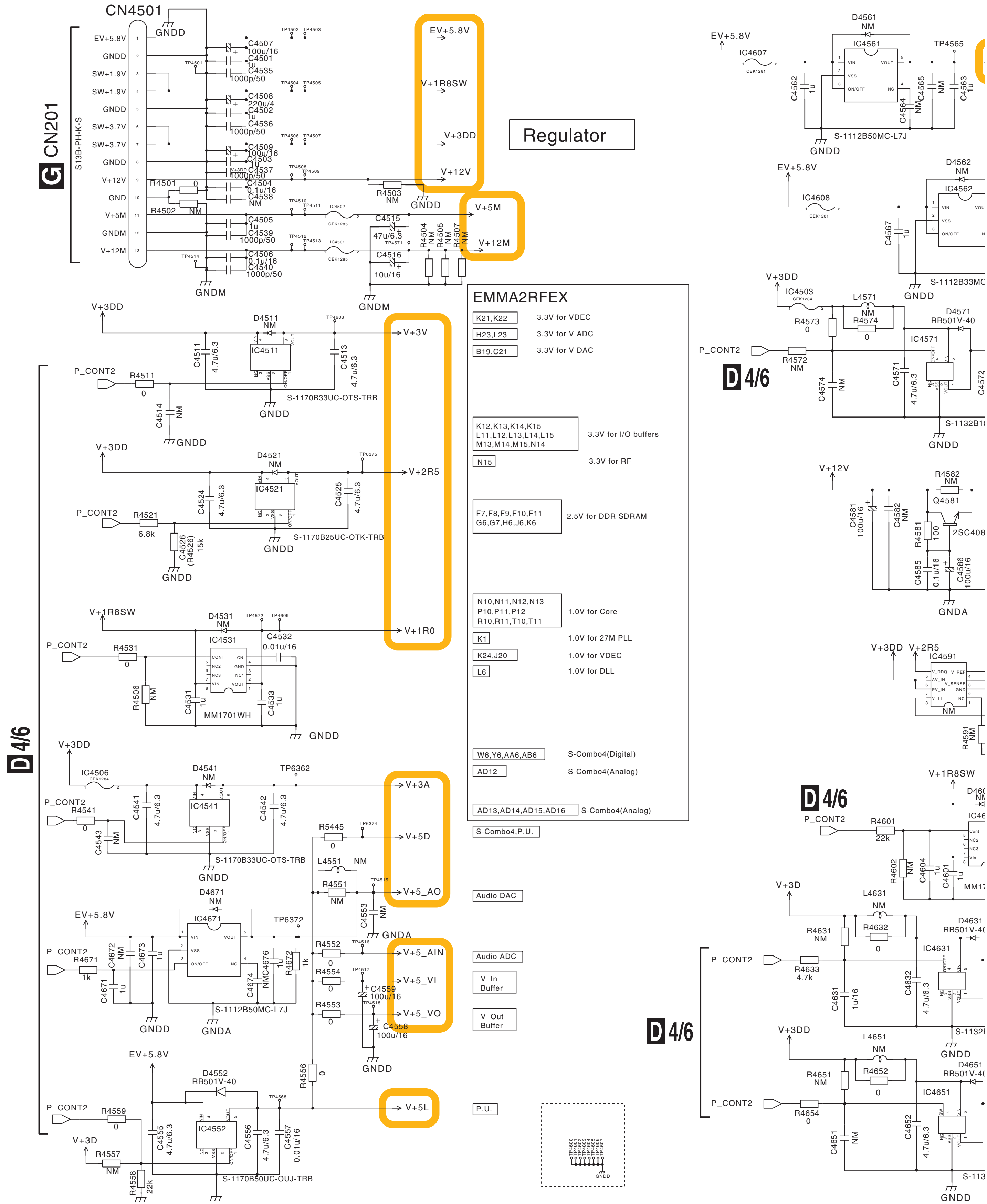
10.6 SERVICE MAIN ASSY (2/6)



D 2/6 SERVICE MAIN ASSY (2/6) (VXX3268)

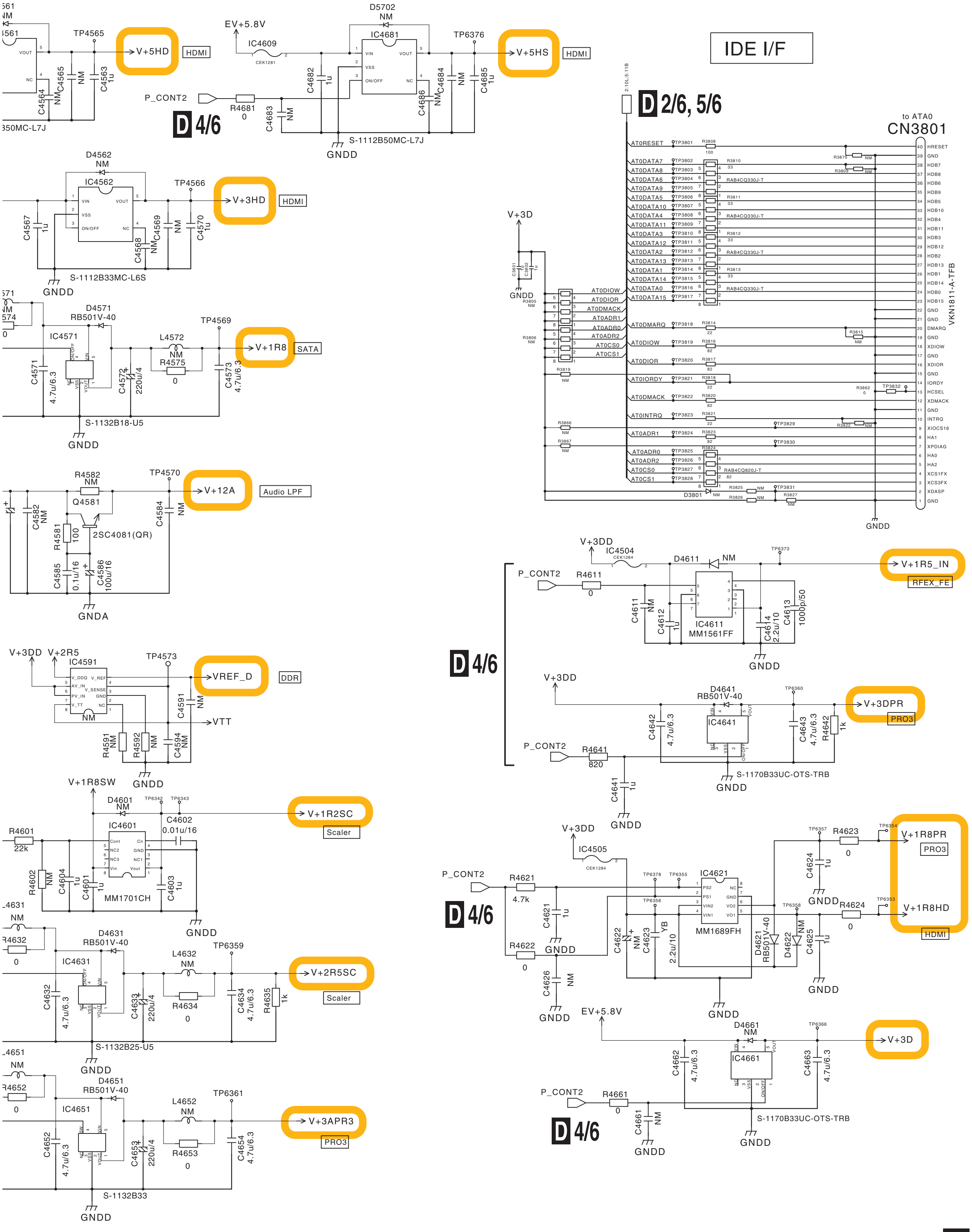


10.7 SERVICE MAIN ASSY (3/6)

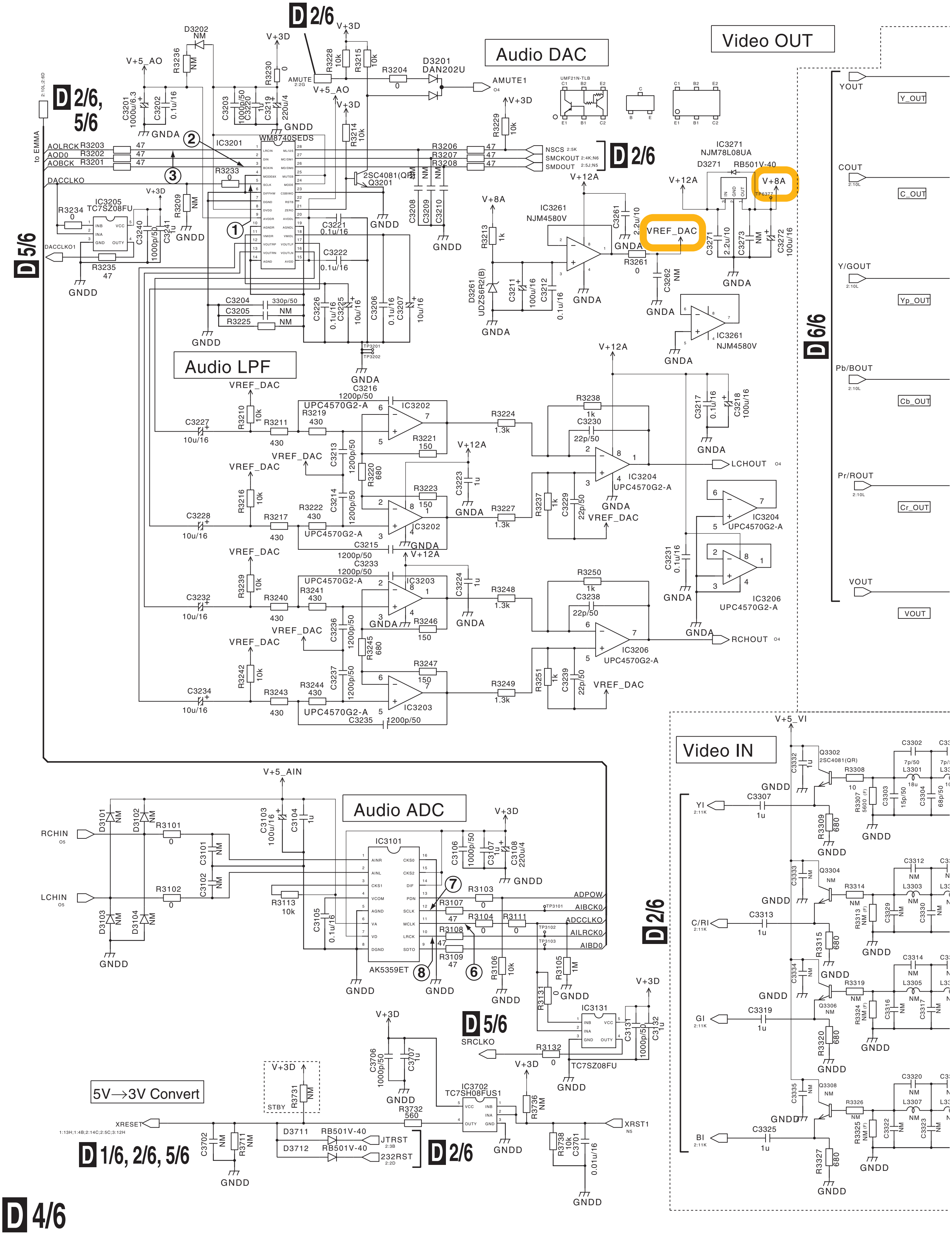


D 3/6

D 3/6 SERVICE MAIN ASSY (3/6)
(VXX3268)

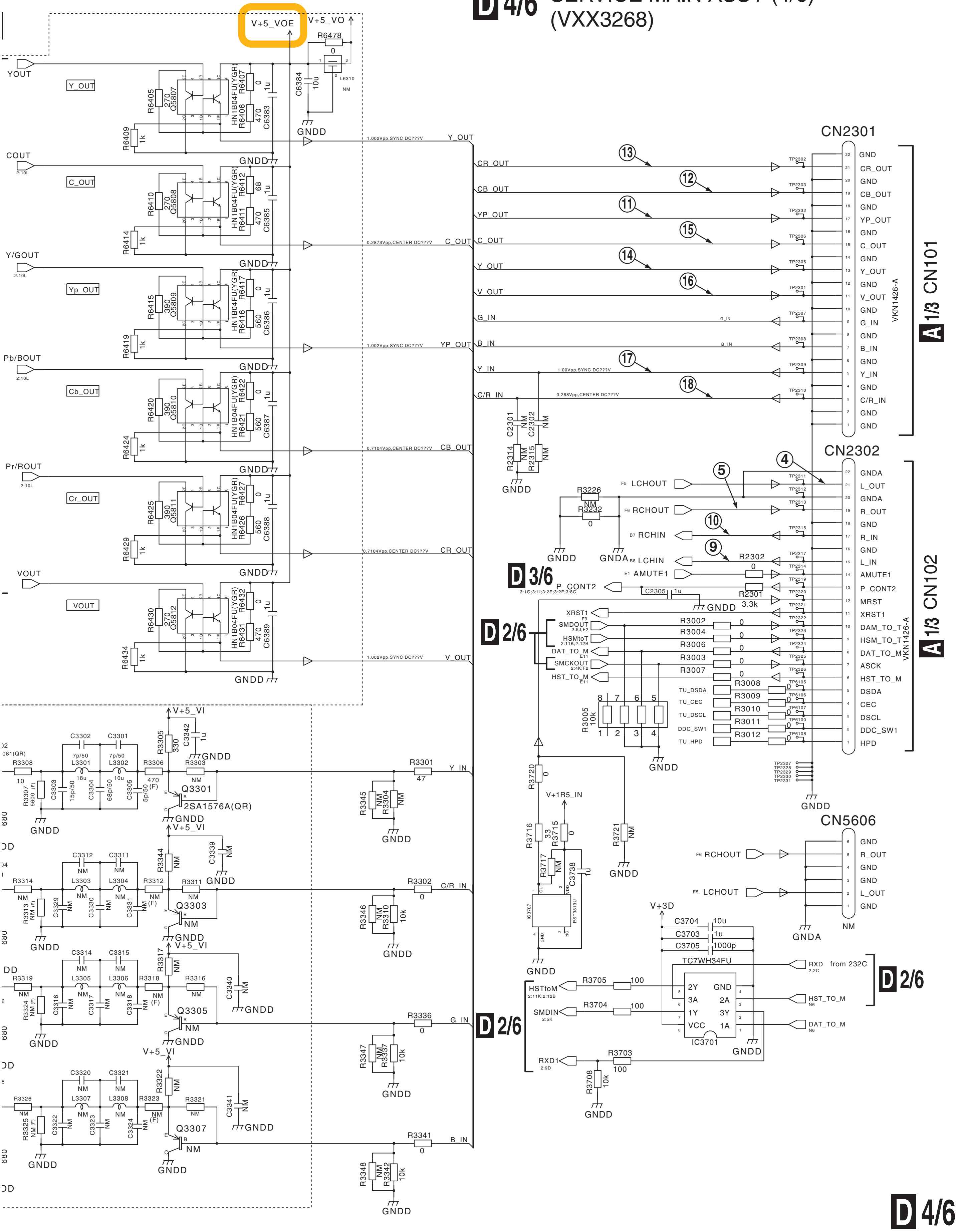


10.8 SERVICE MAIN ASSY (4/6)



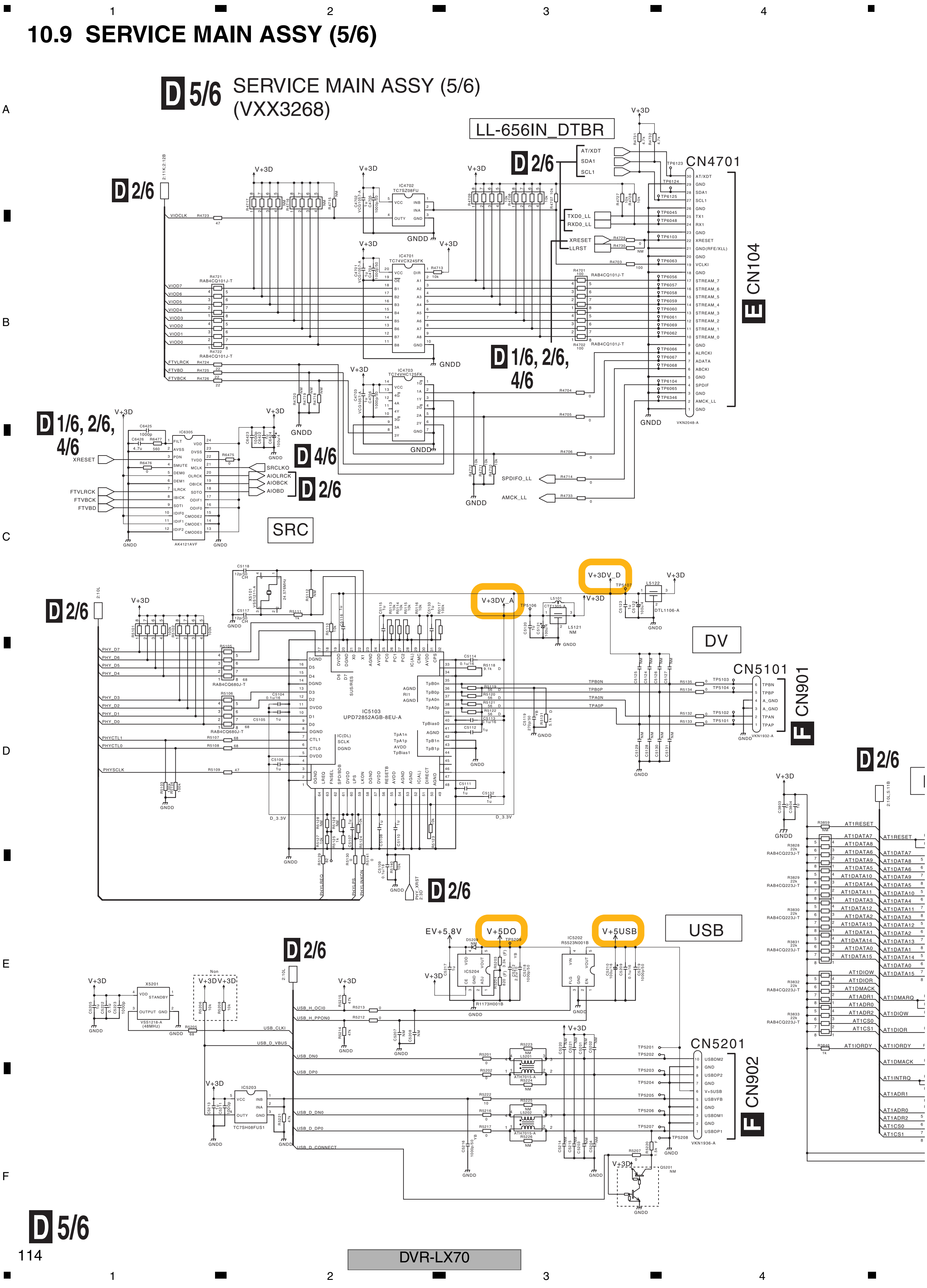
D 4/6

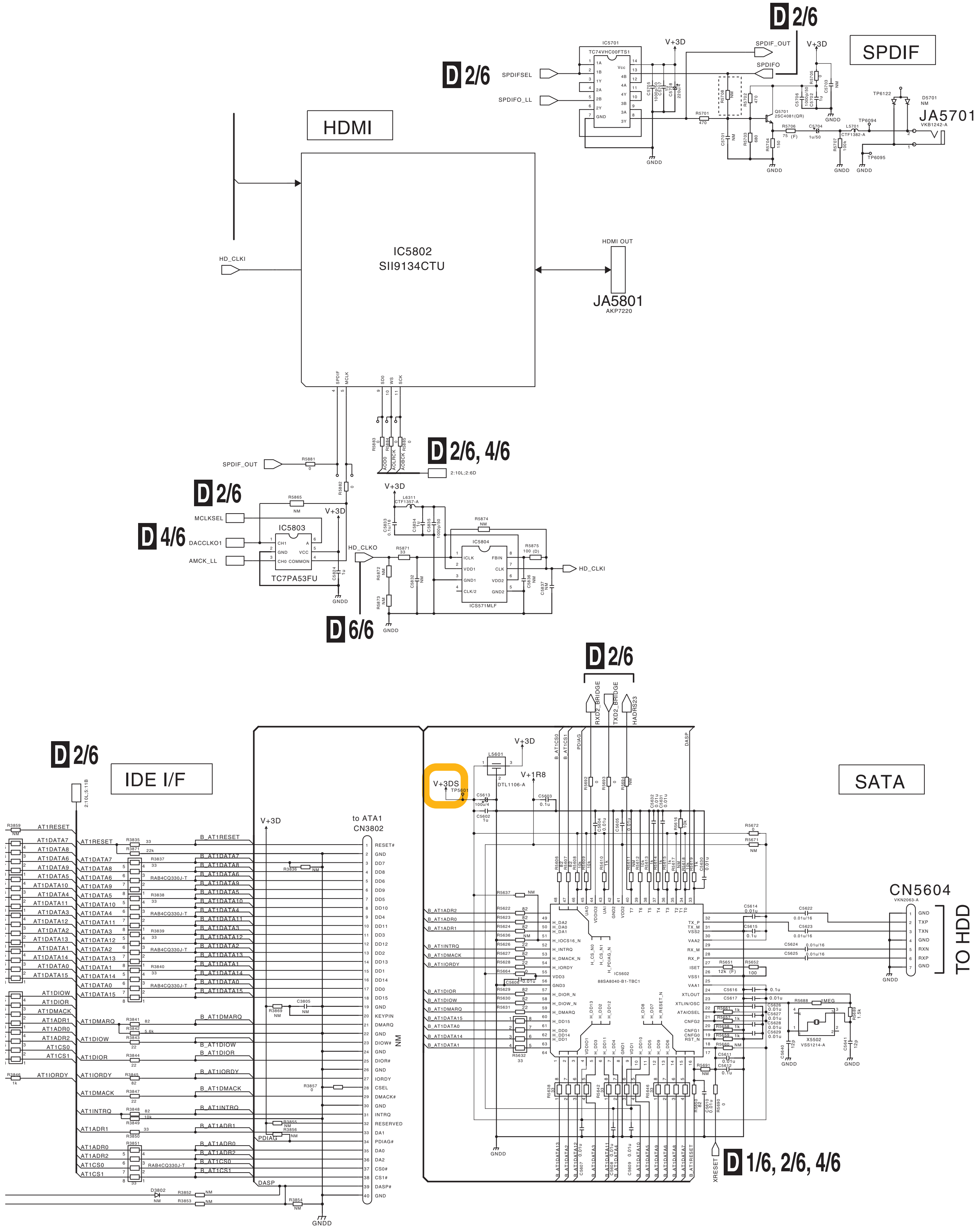
D 4/6 SERVICE MAIN ASSY (4/6)
(VXX3268)



10.9 SERVICE MAIN ASSY (5/6)

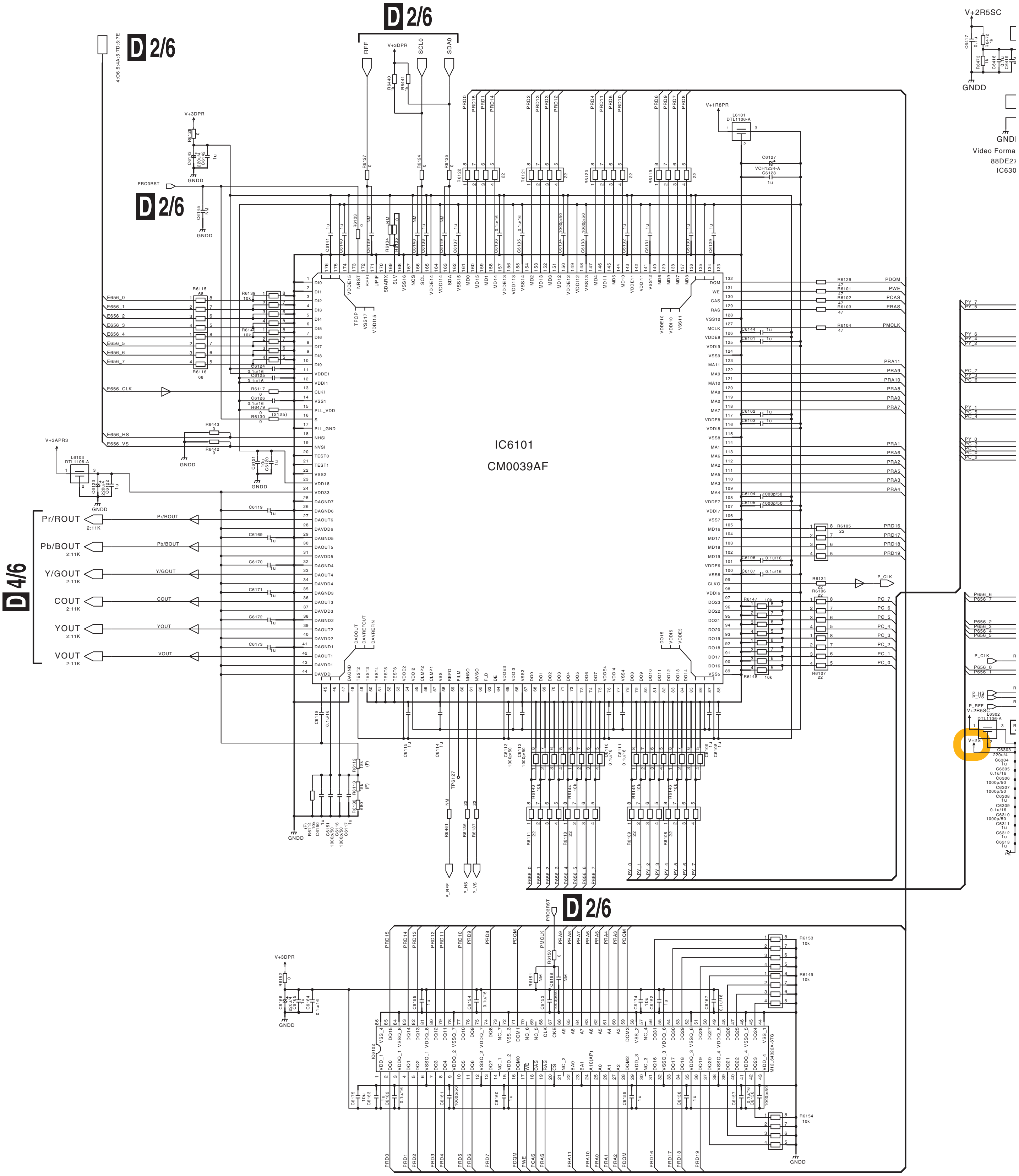
D 5/6 SERVICE MAIN ASSY (5/6)
(VXX3268)

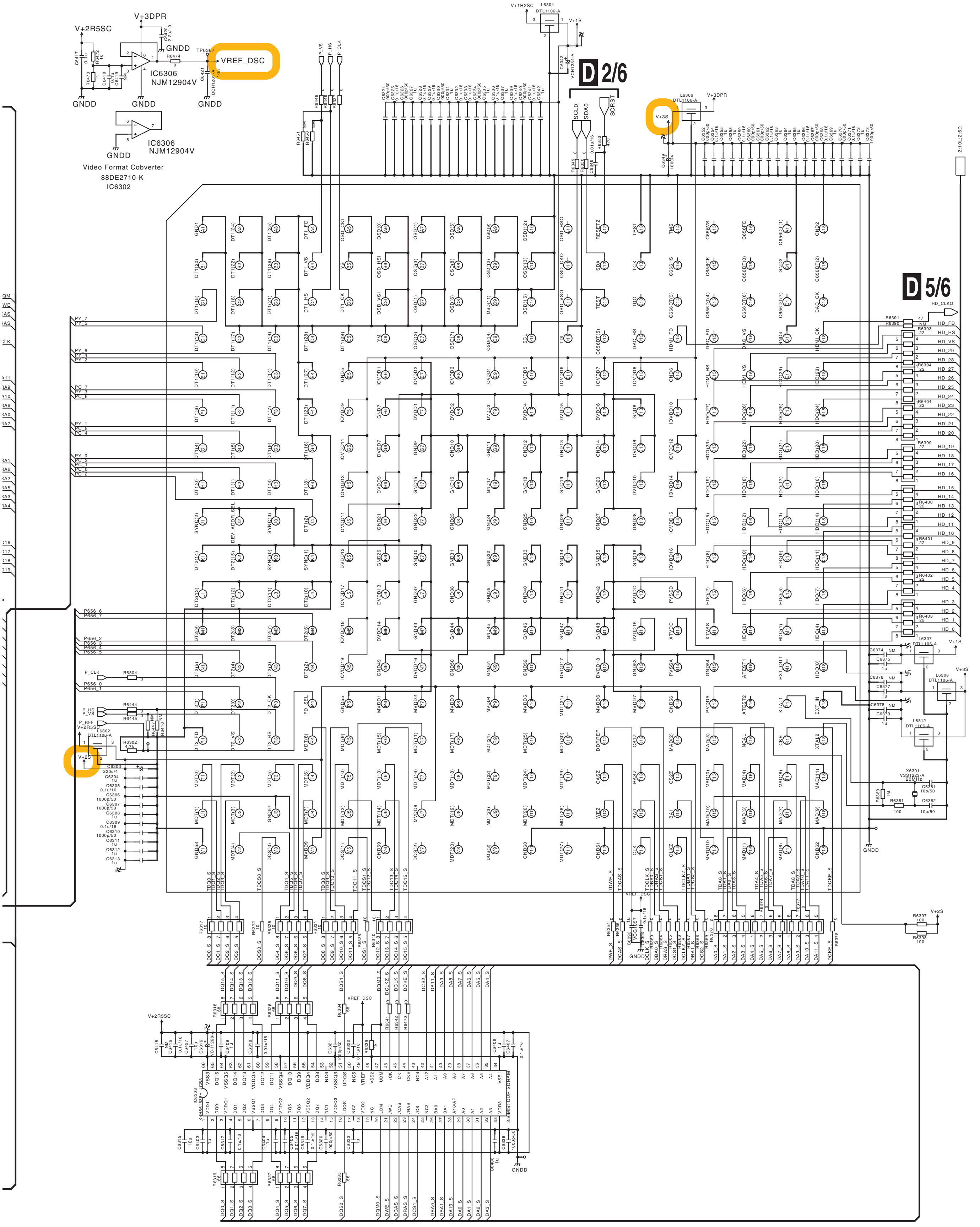



D 2/6
SPDIF
IC5701
TC74VHC00FTS1
SPDIFSEL
SPDIFO_LL
SPDIF_OUT
SPDIFO
V+3D
Q5701
2SC4081(QR)
TP6122
D5701
NM
JA5701
VKB1242-A
TP6094
TP6095
L5701
CTF1382-A
GNDD
HDMI
IC5802
SII9134CTU
HD_CLKI
HDMI OUT
JA5801
AKP7220
SPDIF
MCLK
SD0
WS
SCK
D 2/6, 4/6
2:10L;2:6D
SPDIF_OUT
R5881
D 2/6
D 4/6
MCLKSEL
DACCLKO1
AMCK_LL
IC5803
TC7PA53FU
V+3D
L6311
CTF1357-A
HD_CLKO
IC5804
ICS571MLF
HD_CLKI
D 6/6
GNDD
D 2/6
RXD2_BRIDGE
TXD2_BRIDGE
HADRS23
D 2/6
IDE I/F
2:10L;5:11B
V+3D
to ATA1
CN3802
V+3DS
TP5601
L5601
DTL1106-A
V+1R8
SATA
IC5602
88SA8040-B1-TBC1
CN5604
VKN2063-A
TO HDD
X5502
VSS1214-A
AT1RESET
AT1DATA7
AT1DATA8
AT1DATA6
AT1DATA9
AT1DATA5
AT1DATA10
AT1DATA4
AT1DATA11
AT1DATA3
AT1DATA12
AT1DATA2
AT1DATA13
AT1DATA1
AT1DATA14
AT1DATA0
AT1DATA15
AT1DIOW
AT1DIOR
AT1DMACK
AT1ADR1
AT1ADR0
AT1ADR2
AT1CS0
AT1CS1
AT1IORDY
AT1DMARQ
AT1INTRQ
RAB4CQ330J-T
B_AT1RESET
B_AT1DMARQ
B_AT1DIOW
B_AT1DIOR
B_AT1IORDY
B_AT1DMACK
B_AT1INTRQ
B_AT1ADR1
B_AT1ADR0
B_AT1ADR2
B_AT1CS0
B_AT1CS1
PDIAG
DASP
RESET#
GND
DD7
DD8
DD6
DD9
DD5
DD10
DD4
DD11
DD3
DD12
DD2
DD13
DD1
DD14
DD0
DD15
KEYPIN
DMARQ
DIOW#
DIOR#
IORDY
CSEL
DMACK#
INTRQ
RESERVED
DA1
PDIAG#
DA0
DA2
CS0#
CS1#
DASP#
NM
GND
TXP
TXN
RXN
RXP
XRESET
D 1/6, 2/6, 4/6

10.10 SERVICE MAIN ASSY (6/6)

D 6/6 SERVICE MAIN ASSY (6/6)
(VXX3268)

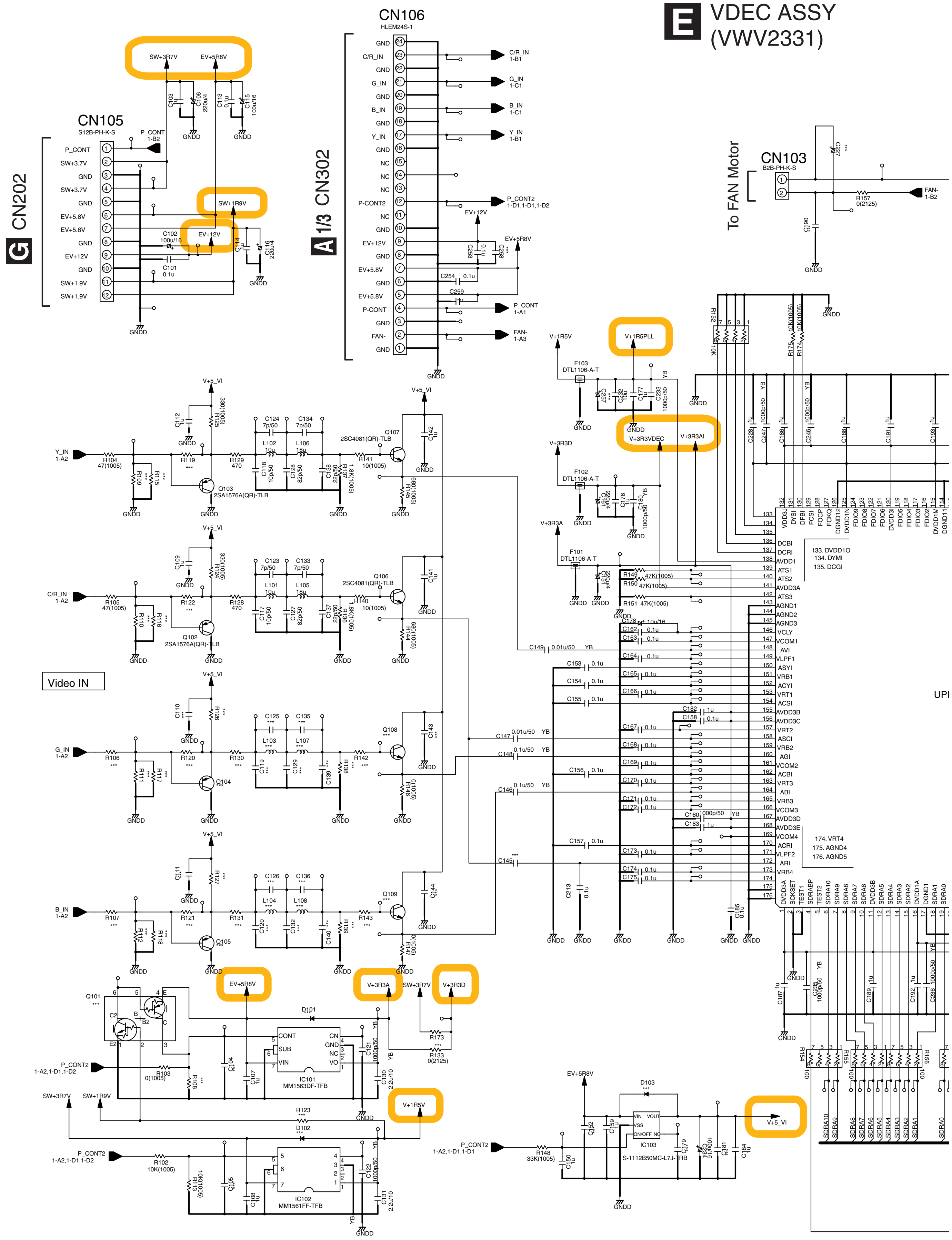


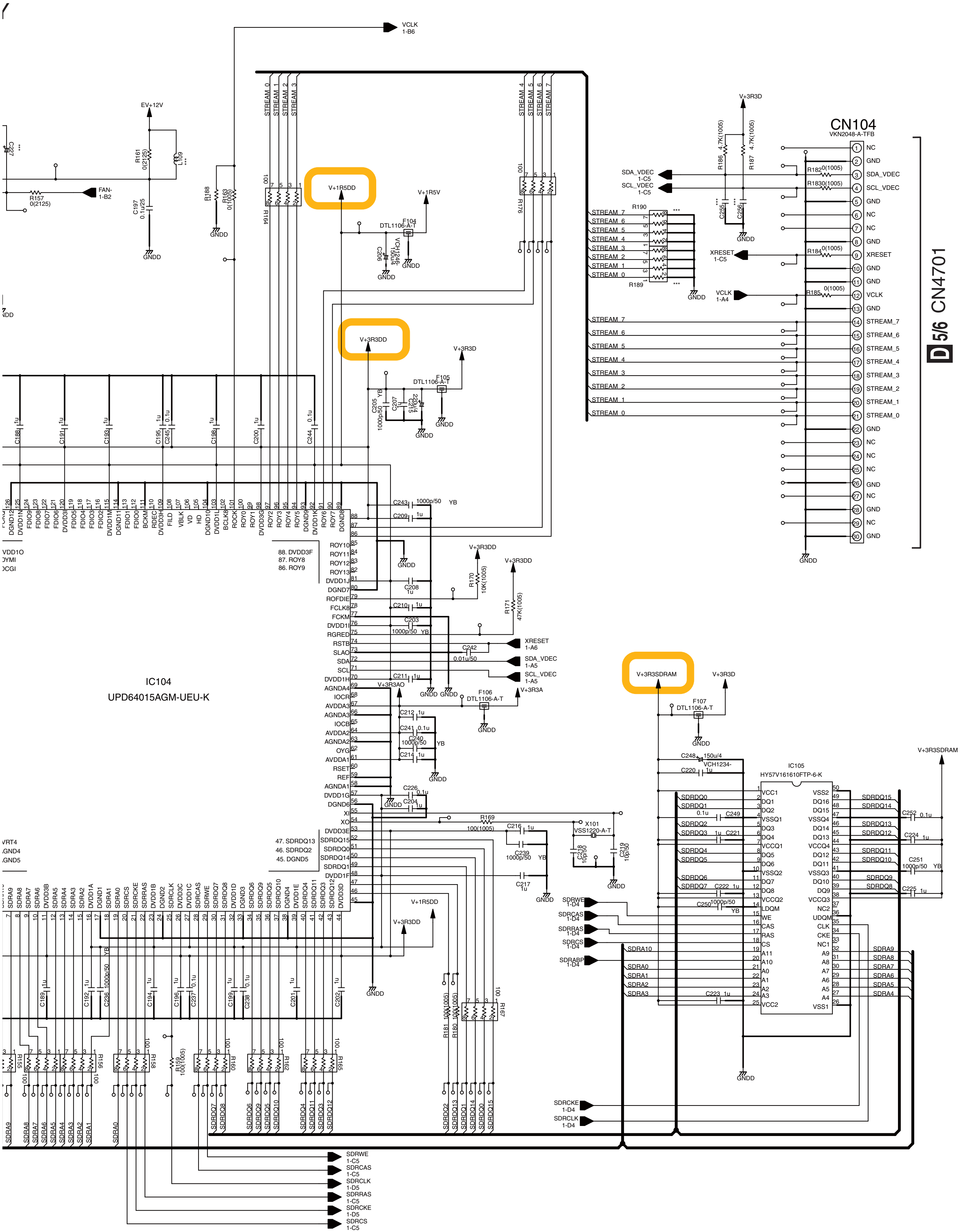

V+2R5SC
V+3DPR
GNDD
IC6306
NJM12904V
TP6387
VREF_DSC
IC6306
NJM12904V
Video Format Cobverter
88DE2710-K
IC6302
V+1R2SC
L6304
DTL1106-A
V+1S
P_VS
P_HS
P_CLK
D 2/6
SCL0
SDA0
SCRST
L6306
DTL1106-A
V+3DPR
V+3S
2:10L2.5D
D 5/6
HD_CLKO
HD_FD
HD_HS
HD_VS
L6307
DTL1106-A
V+1S
L6308
DTL1106-A
V+3S
L6312
DTL1106-A
X6301
VSS1223-A
20MHz
GNDD
P_CLK
P_HS
P_VS
P_RFF
V+2R5SC
L6302
DTL1106-A
V+2S
V+2S
VREF_DSC
V+2R5SC
IC6303
K4H561638H-UCB3
256Mbit DDR SDRAM
GNDD

A
B
C
D
E
F

D 6/6

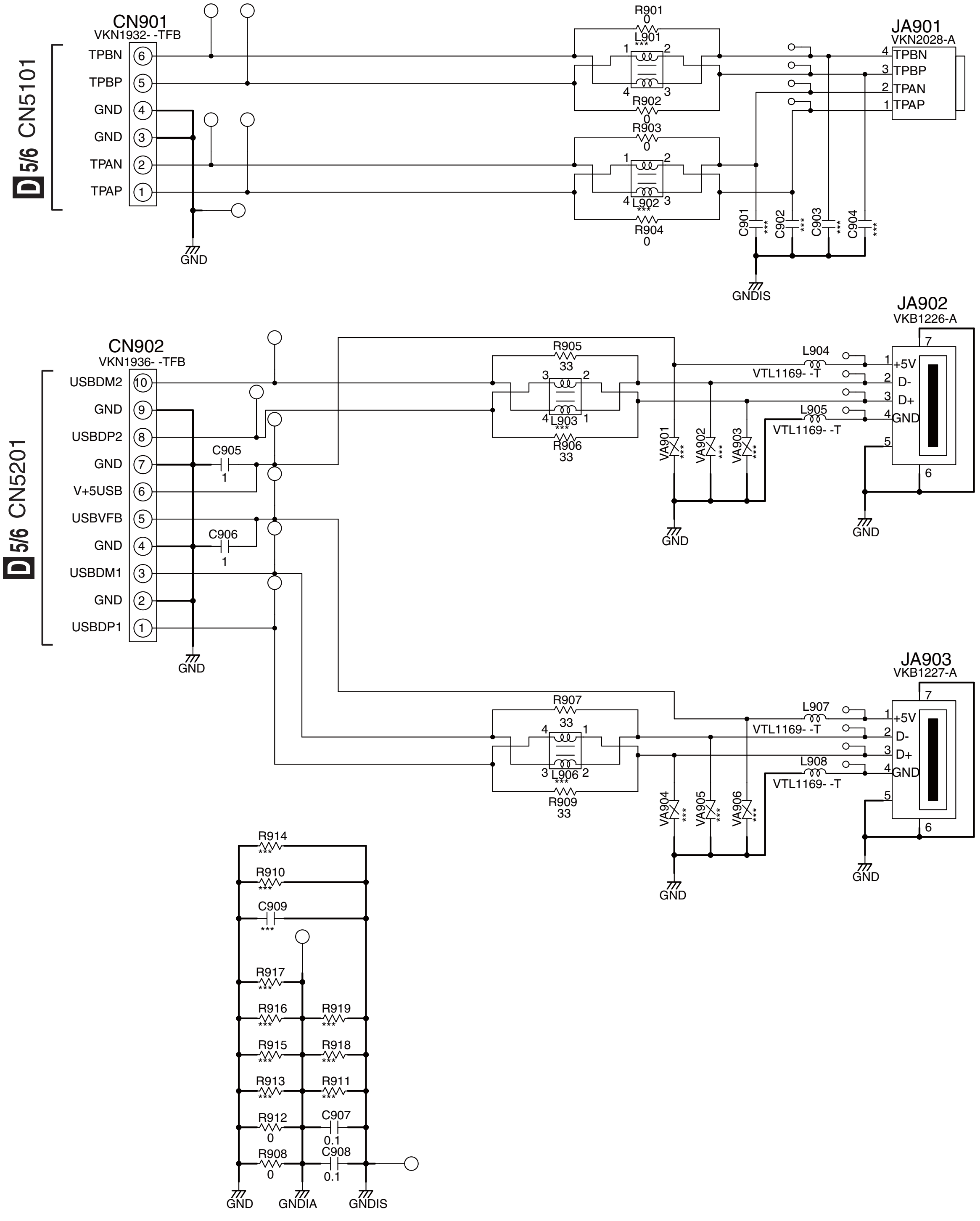
10.11 VDEC ASSY




VCLK 1-B6
EV+12V
R161 0(2125)
L109
C197 0.1u/25
R157 0(2125)
FAN- 1-B2
GNDD
R188
R163 0(1005)
STREAM_0
STREAM_1
STREAM_2
STREAM_3
STREAM_4
STREAM_5
STREAM_6
STREAM_7
R164 100
R176 100
V+1R5DD
V+1R5V
F104 DTL1106-A-T
C206
VCH1246-
V+3R3DD
V+3R3D
F105 DTL1106-A-T
C205 1000p/50
C207 1u
C215 220u/4
V+3R3D
R186 4.7K(1005)
R187 4.7K(1005)
C255
C256
SDA_VDEC 1-C5
SCL_VDEC 1-C5
R190
R189
R182 0(1005)
R183 0(1005)
R184 0(1005)
R185 0(1005)
XRESET 1-C5
VCLK 1-A4
CN104
VKN2048-A-TFB
1 NC
2 GND
3 SDA_VDEC
4 SCL_VDEC
5 GND
6 NC
7 NC
8 GND
9 XRESET
10 GND
11 GND
12 VCLK
13 GND
14 STREAM_7
15 STREAM_6
16 STREAM_5
17 STREAM_4
18 STREAM_3
19 STREAM_2
20 STREAM_1
21 STREAM_0
22 GND
23 NC
24 NC
25 NC
26 GND
27 NC
28 GND
29 NC
30 GND
D 5/6 CN4701
C188 1u
C191 1u
C193 1u
C195 1u
C245 0.1u
C198 1u
C200 1u
C244 0.1u
C243 1000p/50 YB
C209 1u
C208 1u
C210 1u
C203 1000p/50 YB
C242 0.01u/50
C211 1u
V+3R3AO
R170 10K(1005)
R171 47K(1005)
XRESET 1-A6
SDA_VDEC 1-A5
SCL_VDEC 1-A5
F106 DTL1106-A-T
V+3R3A
C212 1u
C241 0.1u
C240 1000p/50 YB
C214 1u
C226 0.1u
C204 1u
R169 100(1005)
C216 1u
C239 1000p/50 YB
C217 1u
X101 VSS1220-A-T
C218 10p/50
C219 10p/50
88. DVDD3F
87. ROY8
86. ROY9
47. SDRDQ13
46. SDRDQ2
45. DGND5
IC104
UPD64015AGM-UEU-K
V+3R3SDRAM
V+3R3D
F107 DTL1106-A-T
C248 150u/4
VCH1234-
C220 1u
IC105
HY57V161610FTP-6-K
VCC1
DQ1
DQ2
VSSQ1
DQ3
DQ4
VCCQ1
DQ5
DQ6
VSSQ2
DQ7
DQ8
VCCQ2
LDQM
WE
CAS
RAS
CS
A11
A10
A0
A1
A2
A3
VCC2
VSS2
DQ16
DQ15
VSSQ4
DQ14
DQ13
VCCQ4
DQ12
DQ11
VSSQ3
DQ10
DQ9
VCCQ3
NC2
UDQM
CLK
CKE
NC1
A9
A8
A7
A6
A5
A4
VSS1
C249 0.1u
C221 1u
C222 1u
C250 1000p/50 YB
C223 1u
C252 0.1u
C224 1u
C251 1000p/50 YB
C225 1u
V+3R3SDRAM
SDRWE 1-D4
SDRCAS 1-D4
SDRRAS 1-D4
SDRCS 1-D4
SDRABP 1-D4
SDRCKE 1-D4
SDRCLK 1-D4
V+1R5DD
V+3R3DD
C189 1u
C192 1u
C236 1000p/50 YB
C194 1u
C196 1u
C237 0.1u
C199 1u
C238 0.1u
C201 1u
C202 1u
R155 100
R156 100
R158 100
R159 100(1005)
R160 100
R162 100
R165 100
R167 100
R180 100(1005)
R181 100(1005)
SDRWE 1-C5
SDRCAS 1-C5
SDRCLK 1-D5
SDRRAS 1-C5
SDRCKE 1-D5
SDRCS 1-C5
SDRABP 1-D5
A
B
C
D
E
F

10.12 DVUB ASSY

F DVUB ASSY
(VWV2324)



A

B

C

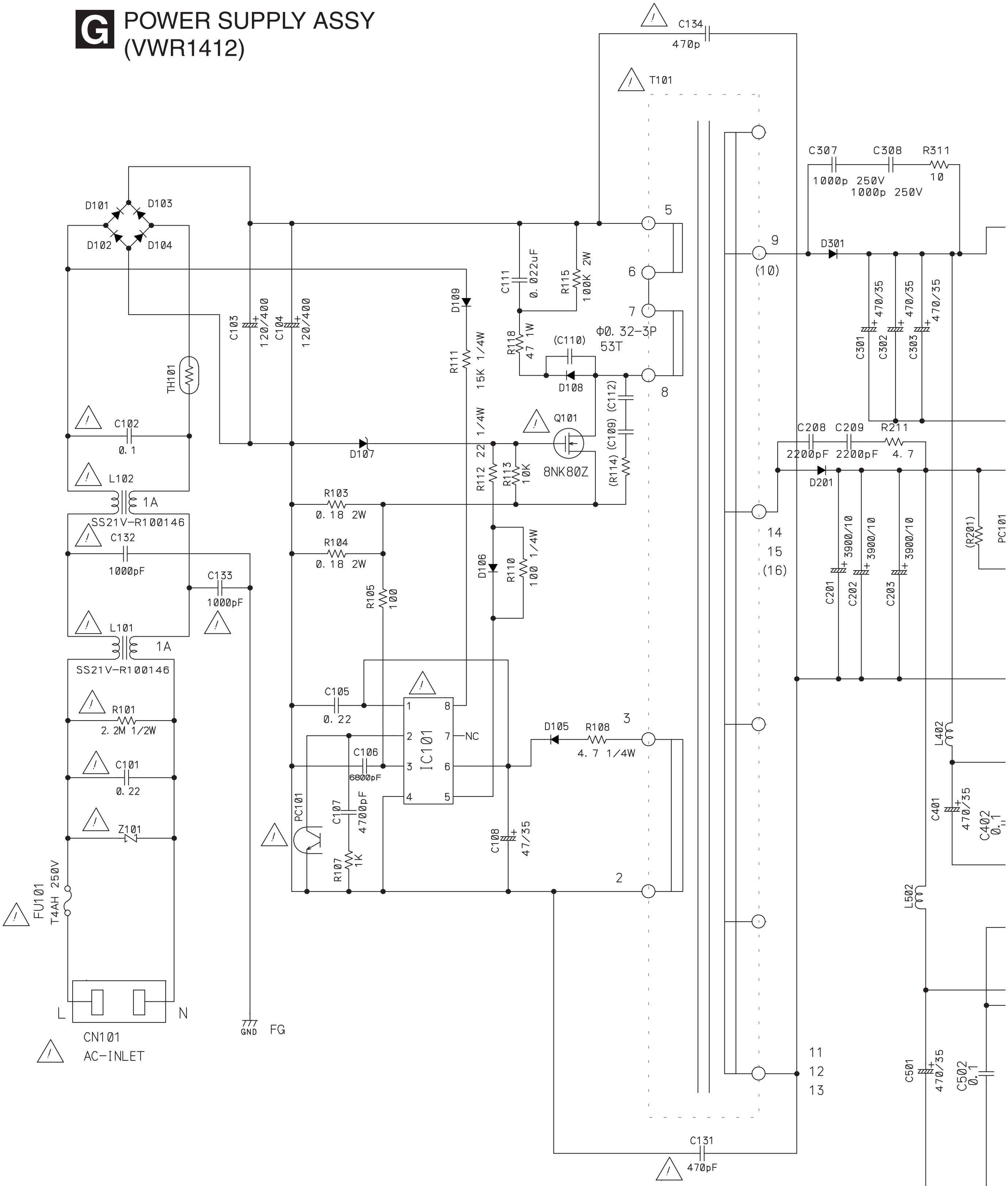
D

E

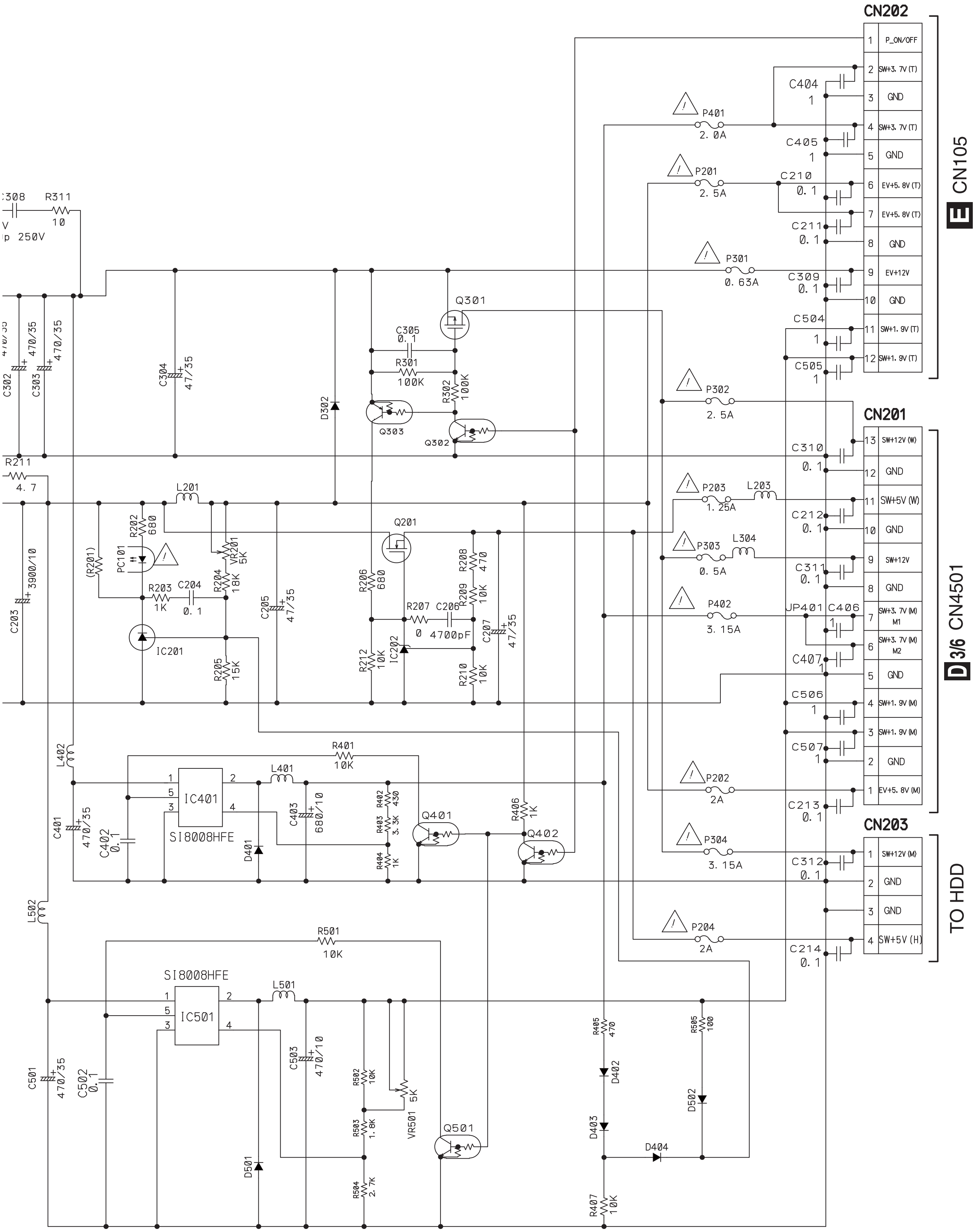
F

10.13 POWER SUPPLY ASSY

G POWER SUPPLY ASSY
(VWR1412)



Unit		
Unit	Resistor	Ω/W (under 1/4W for no direction W)
	Capacitor	µF/V (under 50V for no direction V)

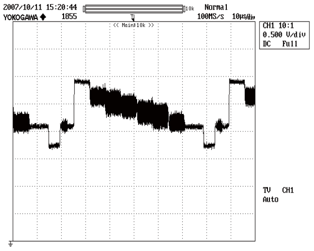

CN202
1 P_ON/OFF
2 SW+3.7V (T)
3 GND
4 SW+3.7V (T)
5 GND
6 EV+5.8V (T)
7 EV+5.8V (T)
8 GND
9 EV+12V
10 GND
11 SW+1.9V (T)
12 SW+1.9V (T)
E CN105
CN201
13 SW+12V (W)
12 GND
11 SW+5V (W)
10 GND
9 SW+12V
8 GND
7 SW+3.7V (M) M1
6 SW+3.7V (M) M2
5 GND
4 SW+1.9V (M)
3 SW+1.9V (M)
2 GND
1 EV+5.8V (M)
D 3/6 CN4501
CN203
1 SW+12V (M)
2 GND
3 GND
4 SW+5V (H)
TO HDD
C404 1
P401 2.0A
C405 1
P201 2.5A
C210 0.1
C211 0.1
P301 0.63A
C309 0.1
C504 1
C505 1
P302 2.5A
C310 0.1
P203 1.25A
L203
C212 0.1
P303 0.5A
L304
C311 0.1
P402 3.15A
JP401
C406 1
C407 1
C506 1
C507 1
P202 2A
C213 0.1
P304 3.15A
C312 0.1
P204 2A
C214 0.1
C308
R311 10
V
p 250V
C302 470/35
C303 470/35
C304 47/35
Q301
C305 0.1
R301 100K
R302 100K
D302
Q303
Q302
R211 4.7
L201
R202 680
(R201)
PC101
VR201 5K
R204 18K
R203 1K
C204 0.1
C203 3900/10
IC201
R205 15K
C205 47/35
Q201
R206 680
R208 470
R209 10K
R207 0
C206 4700pF
C207 47/35
R212 10K
IC202
R210 10K
L402
R401 10K
IC401
SI8008HFE
1 2 3 4 5
L401
C401 470/35
C402 0.1
D401
C403 680/10
R402 430
R403 3.3K
R404 1K
Q401
R406 1K
Q402
L502
R501 10K
SI8008HFE
IC501
1 2 3 4 5
L501
C501 470/35
C502 0.1
C503 470/10
R502 10K
VR501 5K
R503 1.8K
R504 2.7K
D501
Q501
R405 470
D402
R505 100
D502
D403
D404
R407 10K

10.14 WAVE FORMS

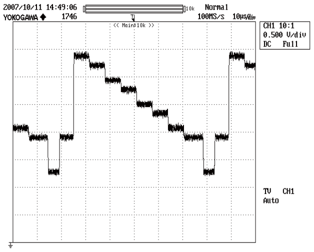
Note : The encircled numbers denote measuring point in the schematic diagram.

A SERVICE TURB ASSY

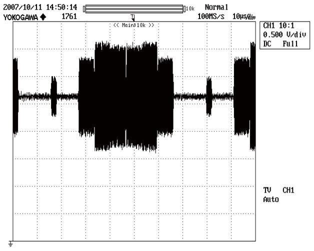
① **IC401-pin18 (TU-VIN)**
(Function: Tuner 9ch)
V: 500 mV/div. H: 10 usec/div



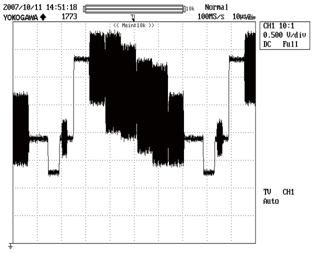
② **C483+side (YOUT)**
(Function: DVD play)
V: 500 mV/div. H: 10 usec/div



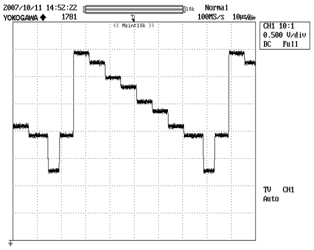
③ **IC404-pin31(COUT)**
(Function:DVD play)
V: 500 mV/div. H: 10 usec/div



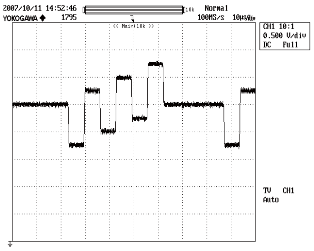
④ **C478+side(VOUT)**
(Function:DVD play)
V: 500 mV/div. H: 10 usec/div



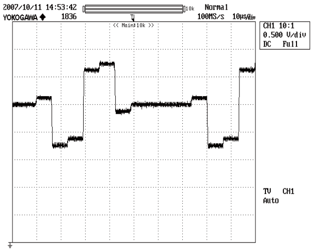
⑤ **C487+side(YpOUT)**
(Function:DVD play)
V: 500 mV/div. H: 10 usec/div



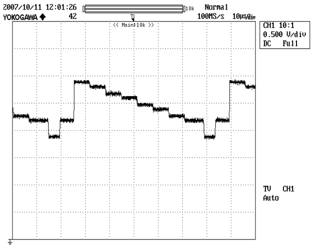
⑥ **C488+side (CBOUT)**
(Function: DVD play)
V: 500 mV/div. H: 10 usec/div



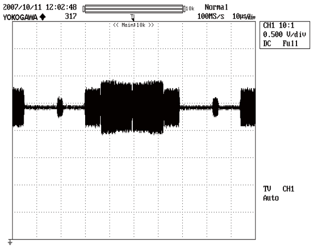
⑦ **C489+side (YpOUT)**
(Function: DVD play)
V: 500mV/div. H:10usec/div



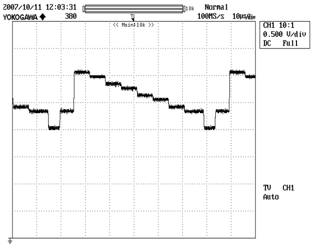
⑧ **CN101-pin13(Y_OUT MtoT)**
(Function:DVD play)
V: 500 mV/div. H: 10 usec/div



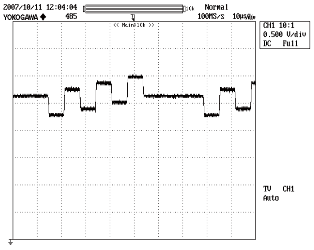
⑨ **CN101-pin15(C_OUT MtoT)**
(Function:DVD play)
V: 500 mV/div. H: 10 usec/div



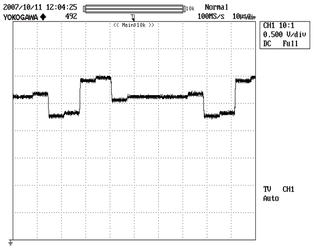
⑩ **CN101-pin17(Yp_OUT MtoT)**
(Function:DVD play)
V: 500 mV/div. H: 10 usec/div



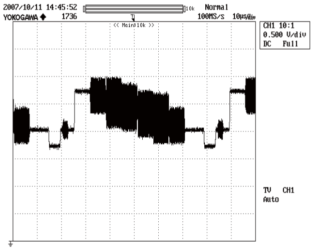
⑪ **CN101-pin19 (CB_OUT MtoT)**
(Function: DVD play)
V: 500 mV/div. H: 10 usec/div



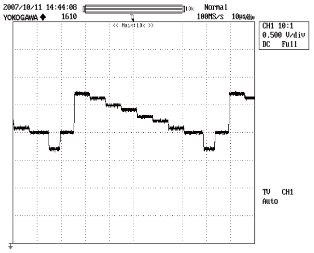
⑫ **CN101-pin21(CR_OUT MtoT)**
(Function: DVD play)
V: 500 mV/div. H: 10 usec/div



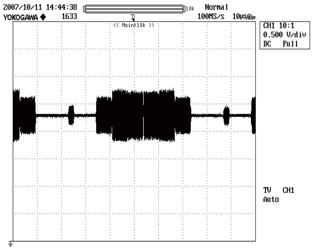
⑬ **IC401-pin14(2VIN)**
(Function:LINE2_IN)
V: 500 mV/div. H: 10 usec/div



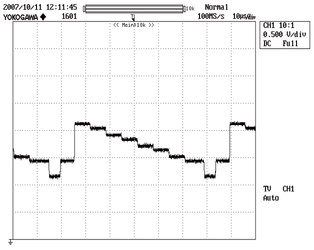
⑭ **IC401-pin7(2YIN)**
(Function:LINE2_IN)
V: 500 mV/div. H: 10 usec/div



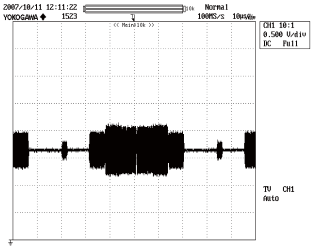
⑮ **IC401-pin9(2CIN)**
(Function:LINE2_IN)
V: 500 mV/div. H: 10 usec/div



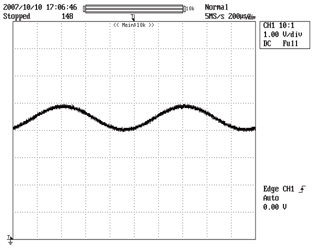
⑯ **CN302-pin8 (Y_IN TtoVDEC)**
(Function: LINE2_IN)
V: 500 mV/div. H: 10 usec/div



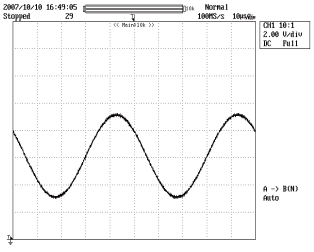
⑰ **CN302-pin2(C_IN TtoVDEC)**
(Function: LINE2_IN)
V: 500 mV/div. H: 10 usec/div



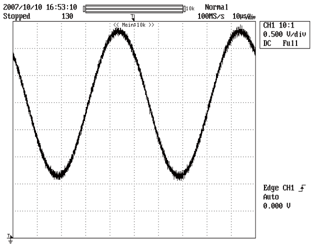
⑱ **IC401-pin87(TU-LIN)**
(Function:Tuner 9ch)
V: 1 V/div. H: 200 usec/div



⑲ **C491+side(L_OUT)**
(Function:DVD play)
V: 2 V/div. H: 10 usec/div



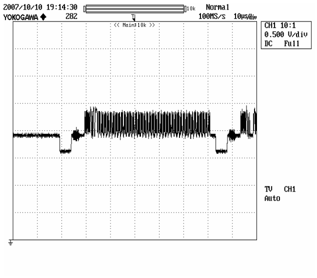
⑳ **CN102-pin15(L_IN)**
(Function:LINE2_IN)
V: 500 mV/div. H: 10 usec/div



㉑ IC101-pin81(TU-VIN)

(Function:Tuner 9ch)

V: 500 mV/div. H: 10 usec/div

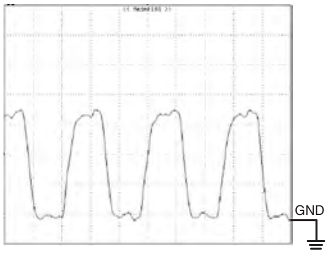


D SERVICE MAIN ASSY

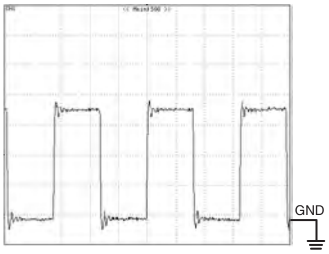
Measurement Condition :

No.1 - 8 : EBU Color Bar (100 / 0 / 75 / 0)

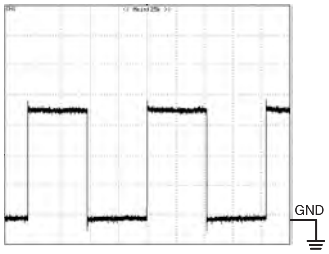
① **IC3201 Pin5 (DACMCK)**
V: 1V/div. H: 20ns/div.



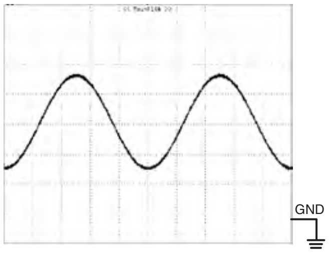
② **IC3201 Pin3 (DACBCK)**
V: 1V/div. H: 100ns/div.



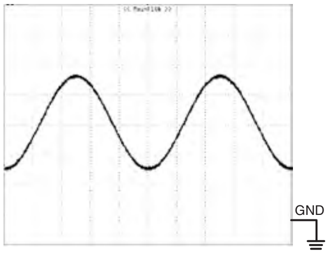
③ **IC3201 Pin1 (DACLRCK)**
V: 1V/div. H: 5us/div.



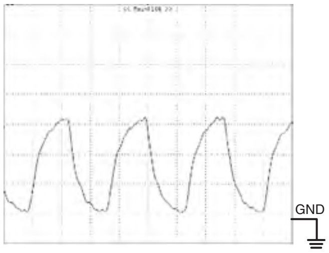
④ **CN2302 Pin21 (LCHOUT)**
V: 2V/div. H: 200us/div.



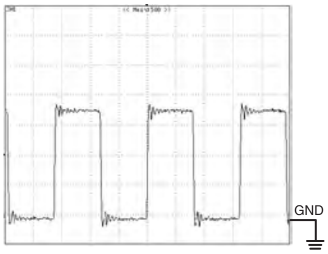
⑤ **CN2302 Pin19 (RCHOUT)**
V: 2V/div. H: 200us/div.



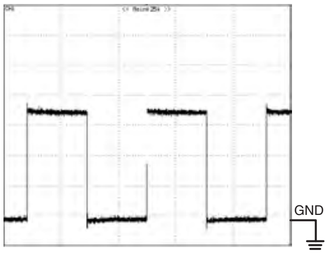
⑥ **IC3101 Pin11 (ADCCLK0)**
V: 1V/div. H: 20ns/div.



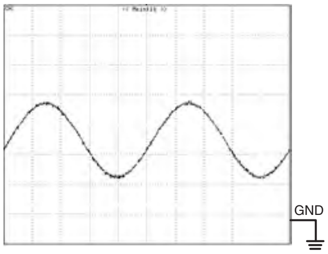
⑦ **IC3101 Pin12 (AD_BCK)**
V: 1V/div. H: 100ns/div.



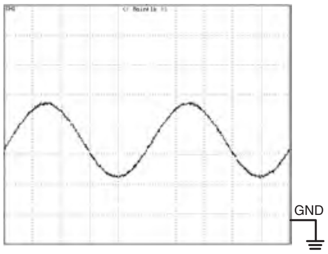
⑧ **IC3101 Pin10 (AD_LRCK)**
V: 1V/div. H: 5us/div.



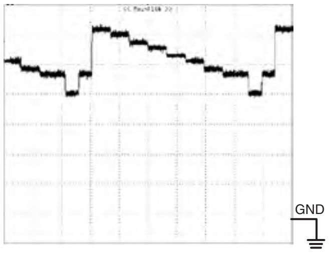
⑨ **CN2302 Pin15 (LCHIN)**
V: 1V/div. H: 200us/div.



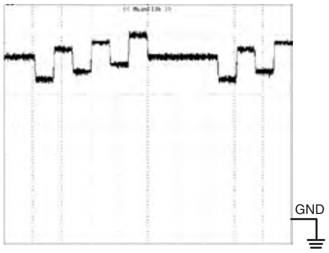
⑩ **CN2302 Pin17 (RCHIN)**
V: 1V/div. H: 200us/div.



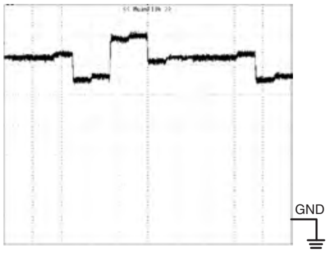
⑪ **CN2301 Pin17 (YP)**
V: 0.5V/div. H: 10us/div.



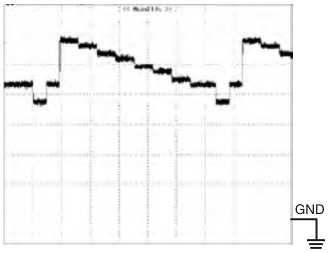
⑫ **CN2301 Pin19 (CB)**
V: 0.5V/div. H: 10us/div.



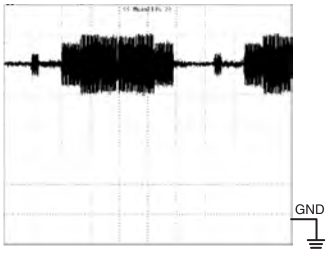
⑬ **CN2301 Pin21 (CR)**
V: 0.5V/div. H: 10us/div.



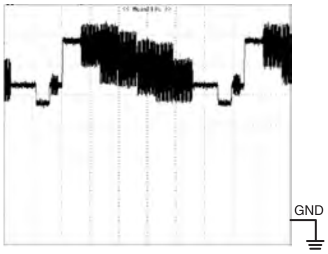
⑭ **CN2301 Pin13 (Y)**
V: 0.5V/div. H: 10us/div.



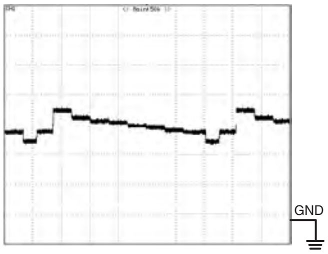
⑮ **CN2301 Pin15 (C)**
V: 0.5V/div. H: 10us/div.



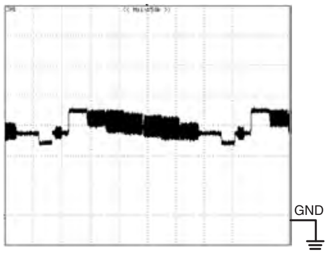
⑯ **CN2301 Pin11 (V)**
V: 0.5V/div. H: 10us/div.



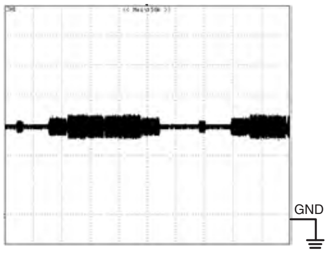
⑰ **CN2301 Pin25 (S_Y)**
V: 1V/div. H: 10us/div.



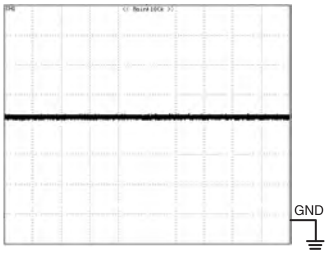
⑰ **CN2301 Pin5 (CVBS)**
V: 1V/div. H: 10us/div.



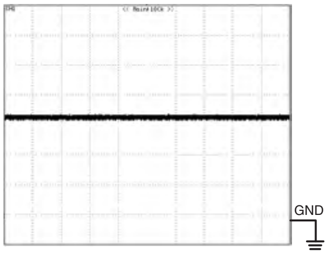
⑱ **CN2301 Pin3 (S_C)**
V: 1V/div. H: 10us/div.



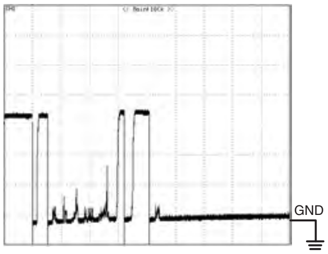
⑲ **IC501 Pin34 (XDMUTE1)**
V: 1V/div. H: 20us/div.



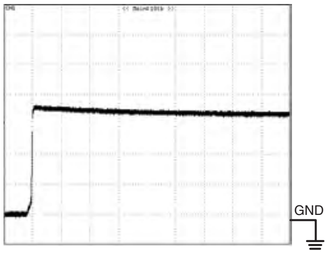
⑳ IC501 Pin35 (XDMUTE2)
V: 1V/div. H: 20us/div.



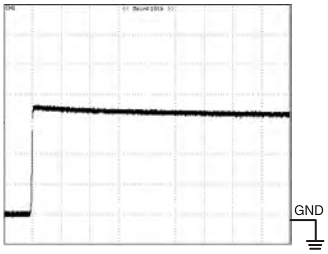
㉑ CN601 Pin3 (CLOSE)
open → close
V: 1V/div. H: 20us/div.



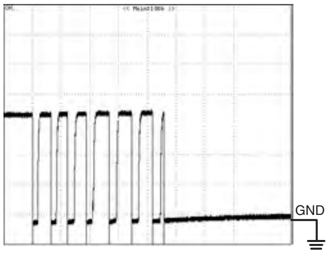
㉑ CN601 Pin3 (CLOSE)
close → open
V: 1V/div. H: 20us/div.



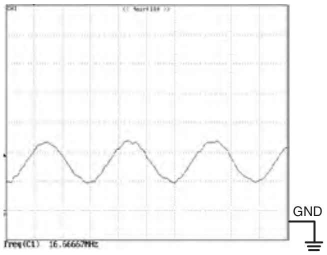
㉒ CN601 Pin5 (OPEN)
open → close
V: 1V/div. H: 20us/div.



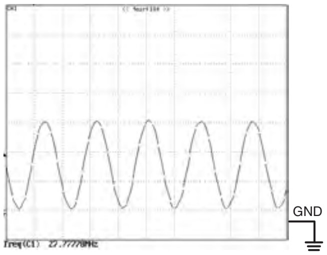
㉒ CN601 Pin5 (OPEN)
close → open
V: 1V/div. H: 20us/div.



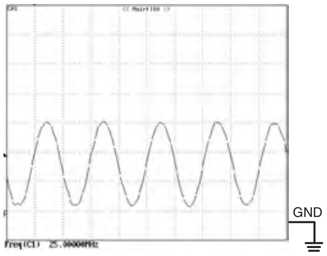
㉓ X101 (16.66667 MHz)
V: 1V/div. H: 20ns/div.



㉔ X1002 (27.77778 MHz)
V: 1V/div. H: 20ns/div.



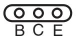
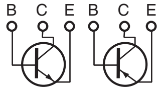
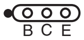
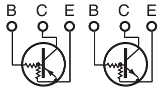
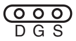
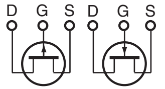
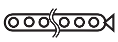
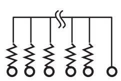
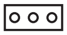
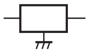
㉕ X1001 (25 MHz)
V: 1V/div. H: 20ns/div.



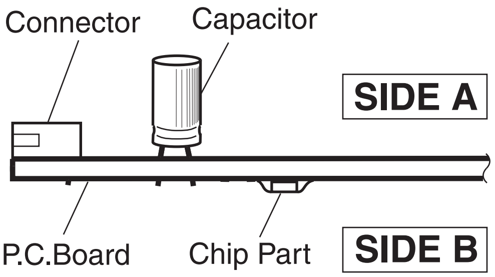
11. PCB CONNECTION DIAGRAM

NOTE FOR PCB DIAGRAMS :

1. Part numbers in PCB diagrams match those in the schematic diagrams.
2. A comparison between the main parts of PCB and schematic diagrams is shown below.

Symbol In PCB Diagrams	Symbol In Schematic Diagrams	Part Name
		Transistor
		Transistor with resistor
		Field effect transistor
		Resistor array
		3-terminal regulator

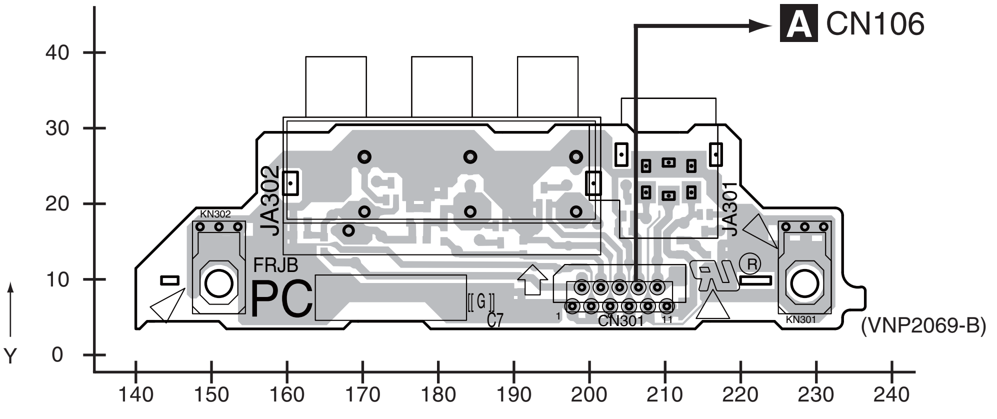
3. The parts mounted on this PCB include all necessary parts for several destinations.
   For further information for respective destinations, be sure to check with the schematic diagram.
4. View point of PCB diagrams.



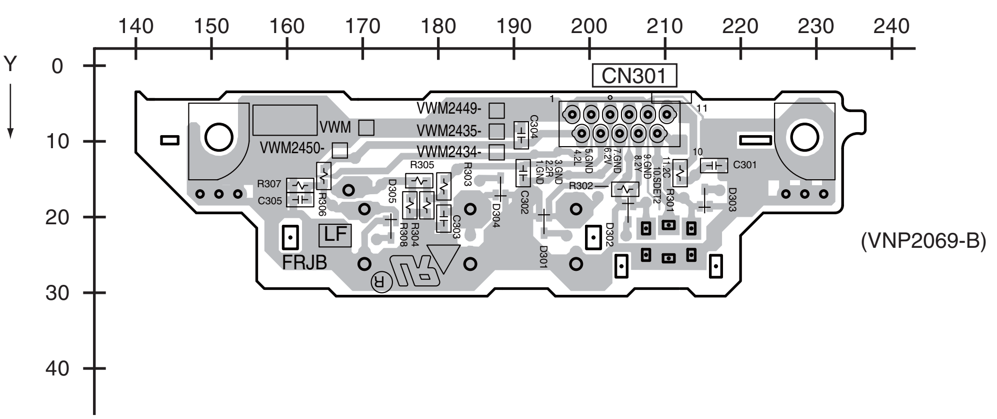
11.1 SERVICE FRJB ASSY

SIDE A **SIDE A**

C SERVICE FRJB ASSY
(VXX3271)



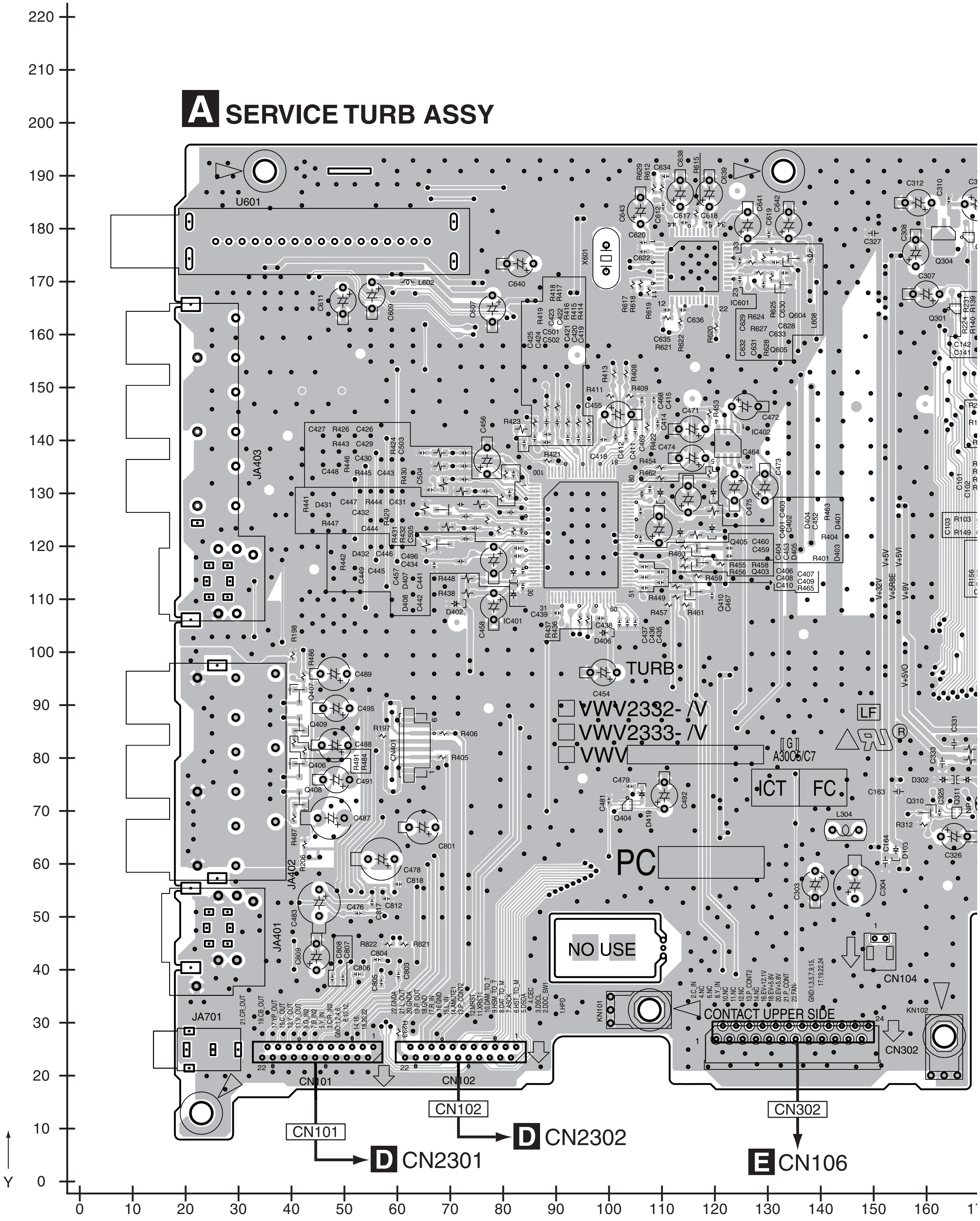
SIDE B **SIDE B**



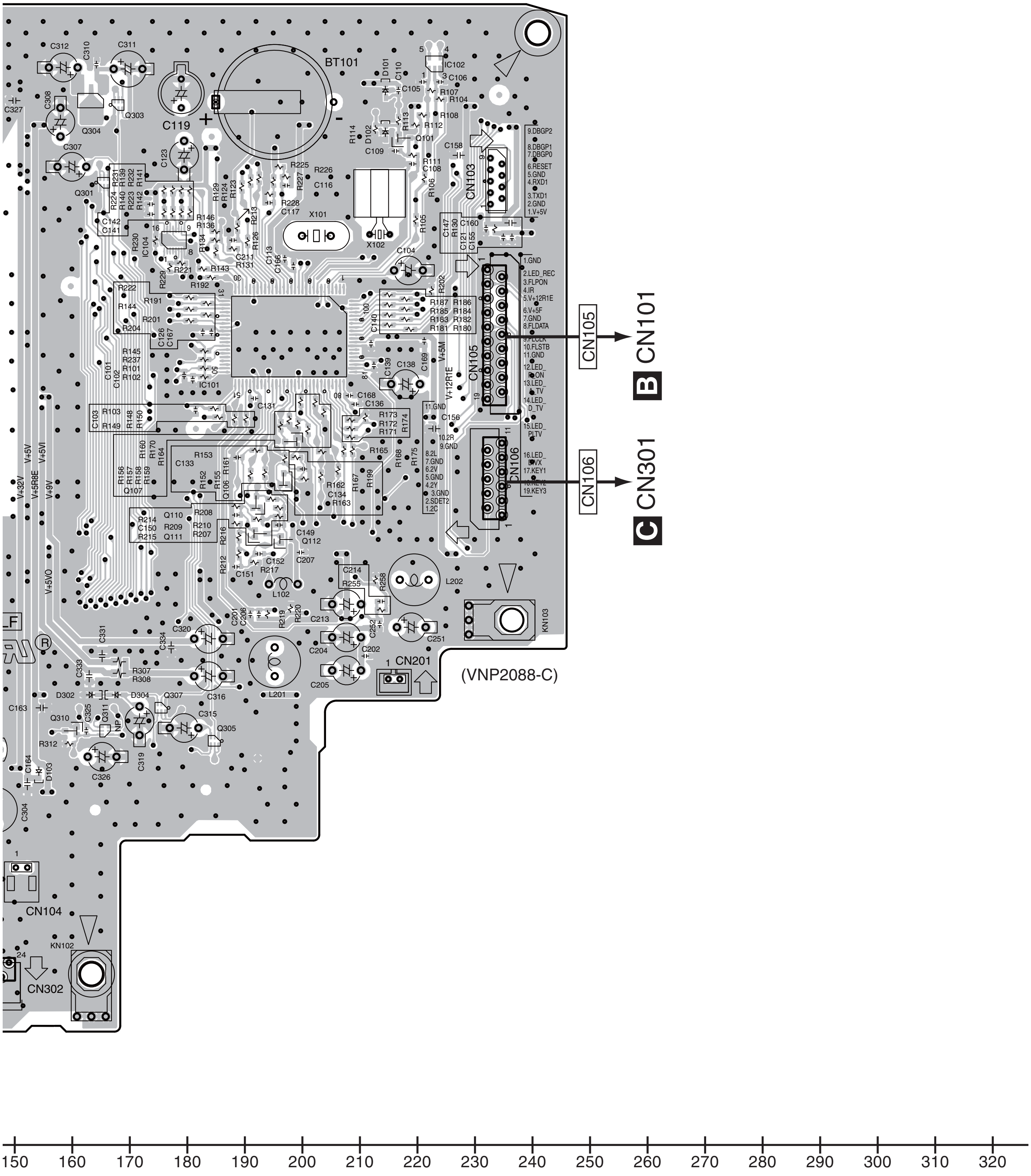
C **C**

11.2 SERVICE TURB ASSY

SIDE A



SIDE A


BT101
IC101
IC102
IC104
X101
X102
C119
CN103
9.DBGP2
8.DBGP1
7.DBGP0
6.RESET
5.GND
4.RXD1
3.TXD1
2.GND
1.V+5V
CN105
1.GND
2.LED_REC
3.FLPON
4.IR
5.V+12R1E
6.V+5F
7.GND
8.FLDATA
9.FLCLK
10.FLSTB
11.GND
12.LED_ PRON
13.LED_ TV
14.LED_ D_TV
15.LED_ PLTV
16.LED_ DVX
17.KEY1
18.KEY2
19.KEY3
CN106
11.GND
10.2R
9.GND
8.2L
7.GND
6.2V
5.GND
4.2Y
3.GND
2.SDET2
1.2C
CN105
B CN101
CN106
C CN301
V+5M
V+12R1E
V+5V
V+5VI
V+32V
V+5R8E
V+9V
V+5VO
CN201
CN104
CN302
KN102
KN103
L102
L201
L202
(VNP2088-C)
150
160
170
180
190
200
210
220
230
240
250
260
270
280
290
300
310
320

SIDE B

A

B

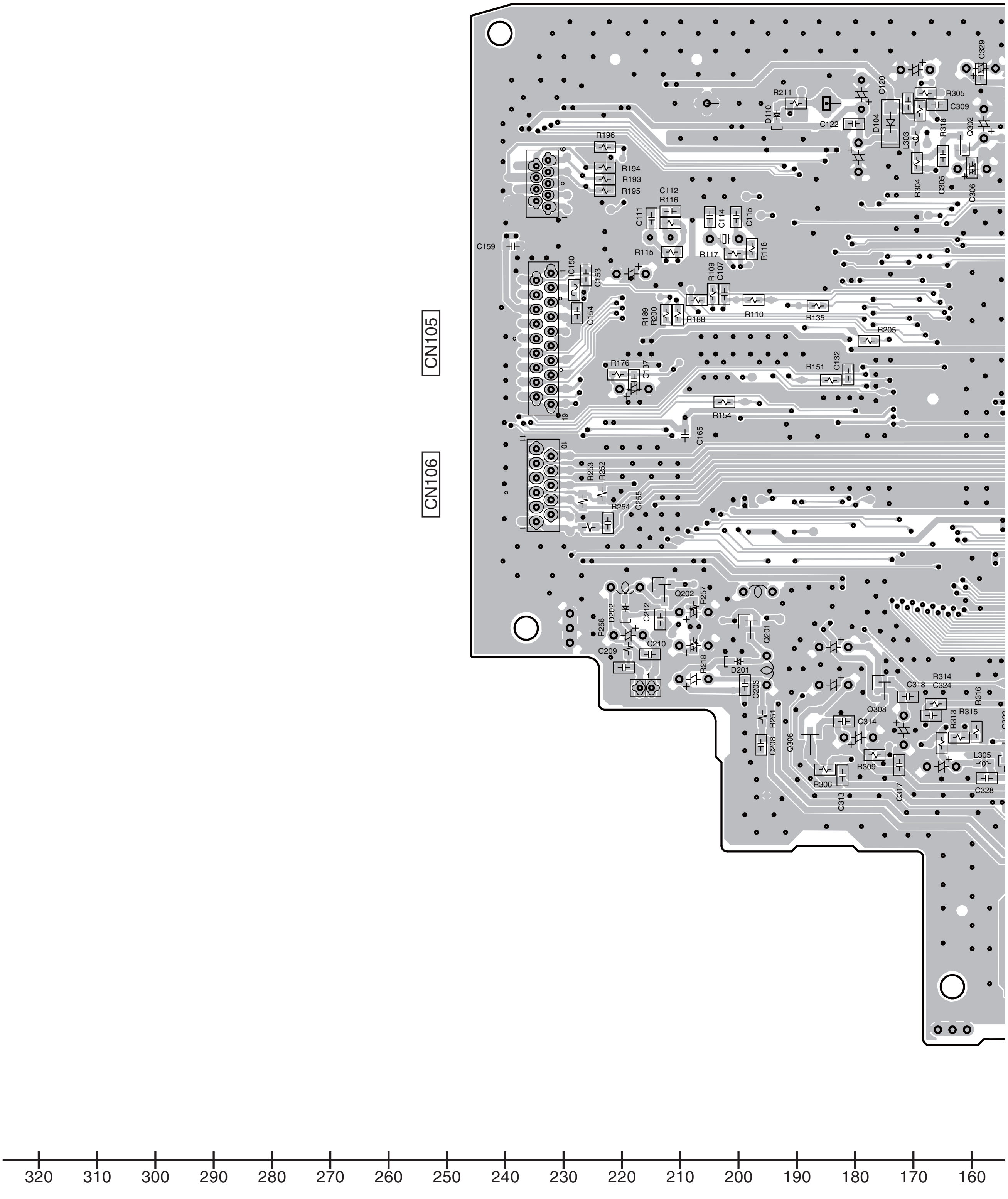
C

D

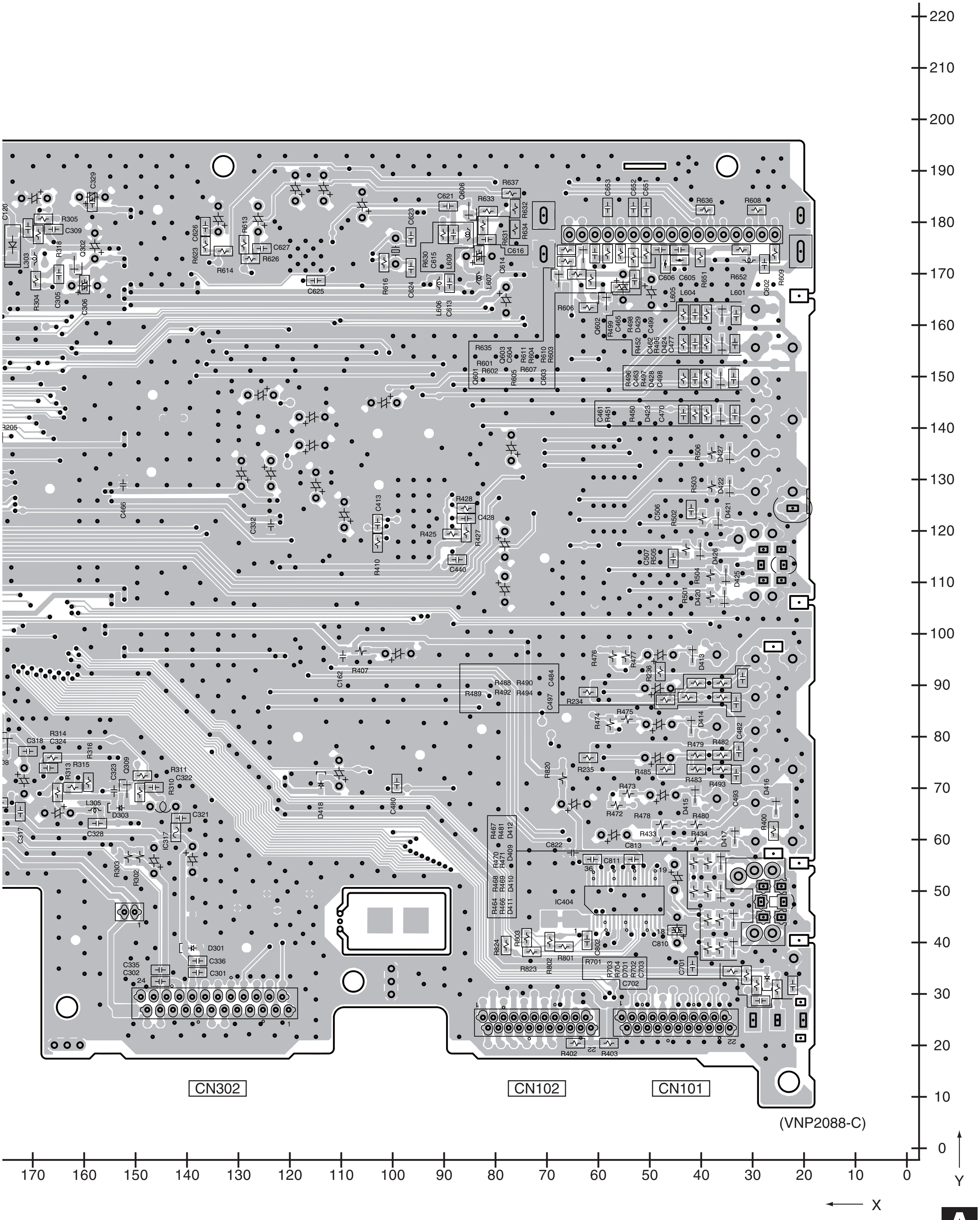
E

F

A SERVICE TURB ASSY



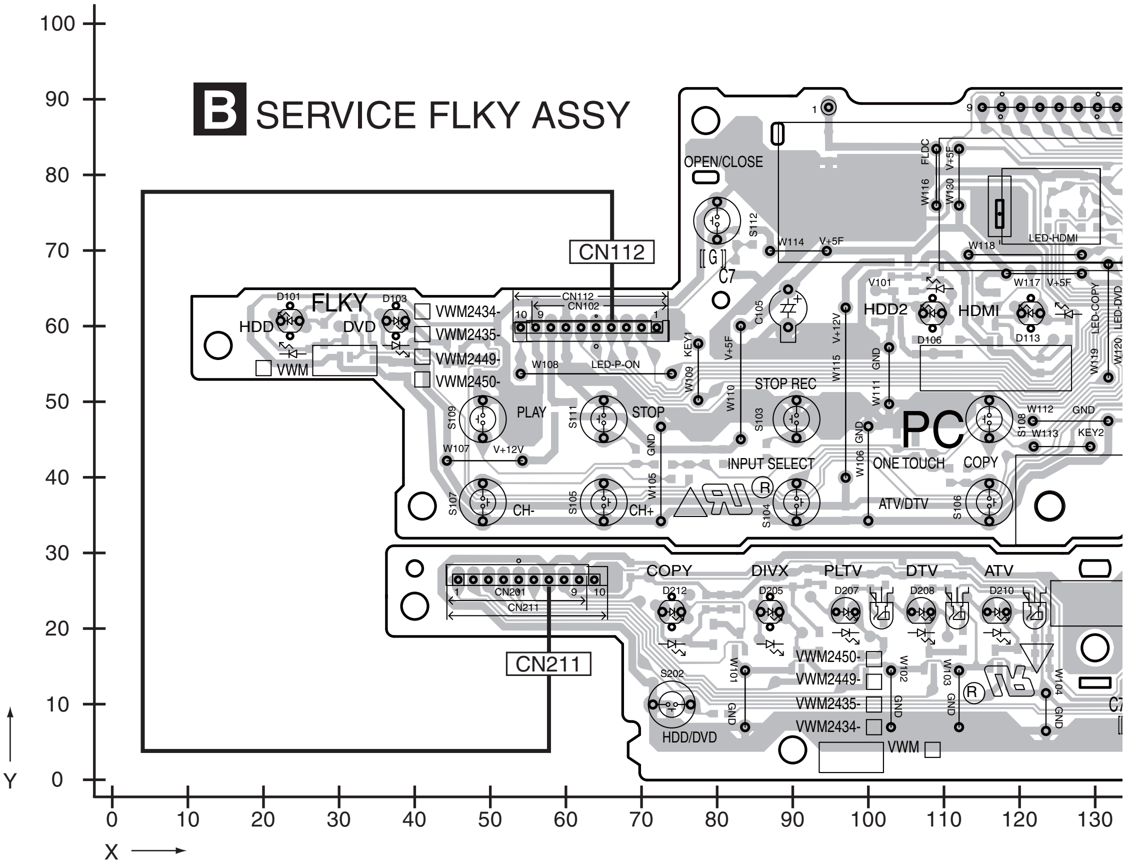
SIDE B



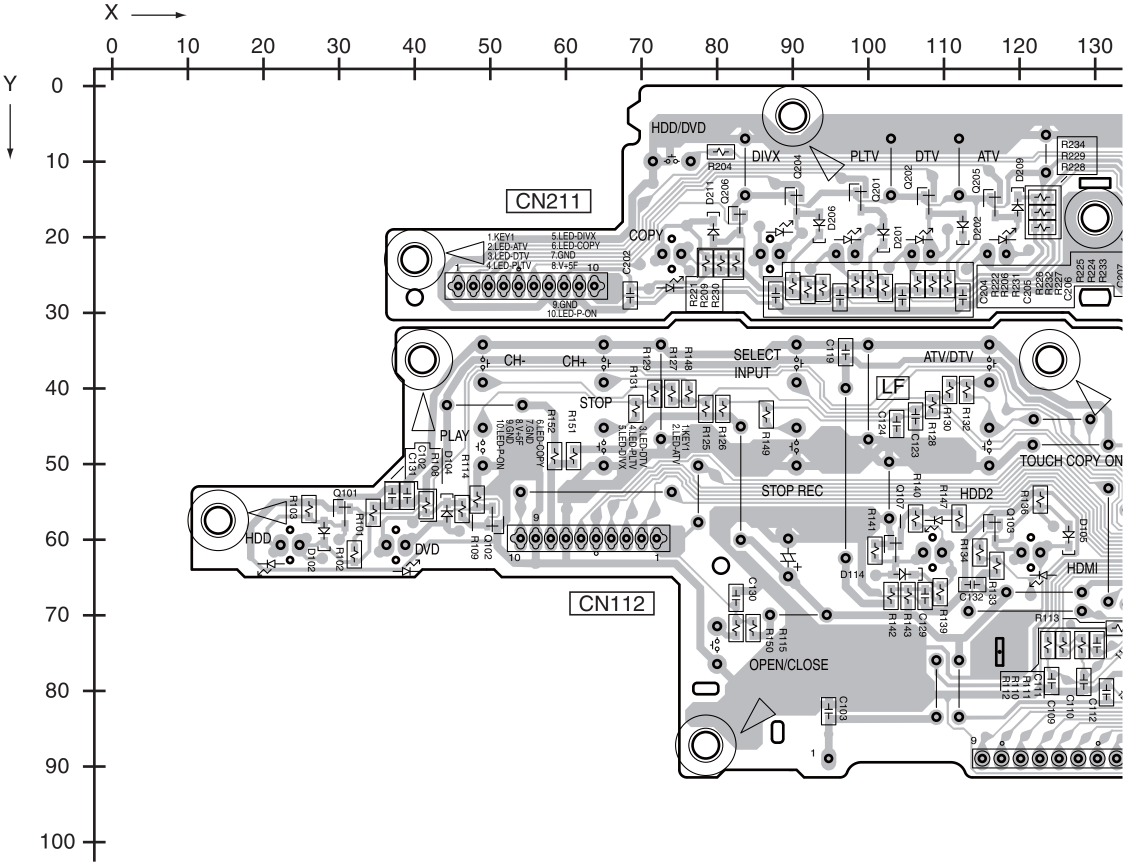
(VNP2088-C)

11.3 SERVICE FLKY ASSY

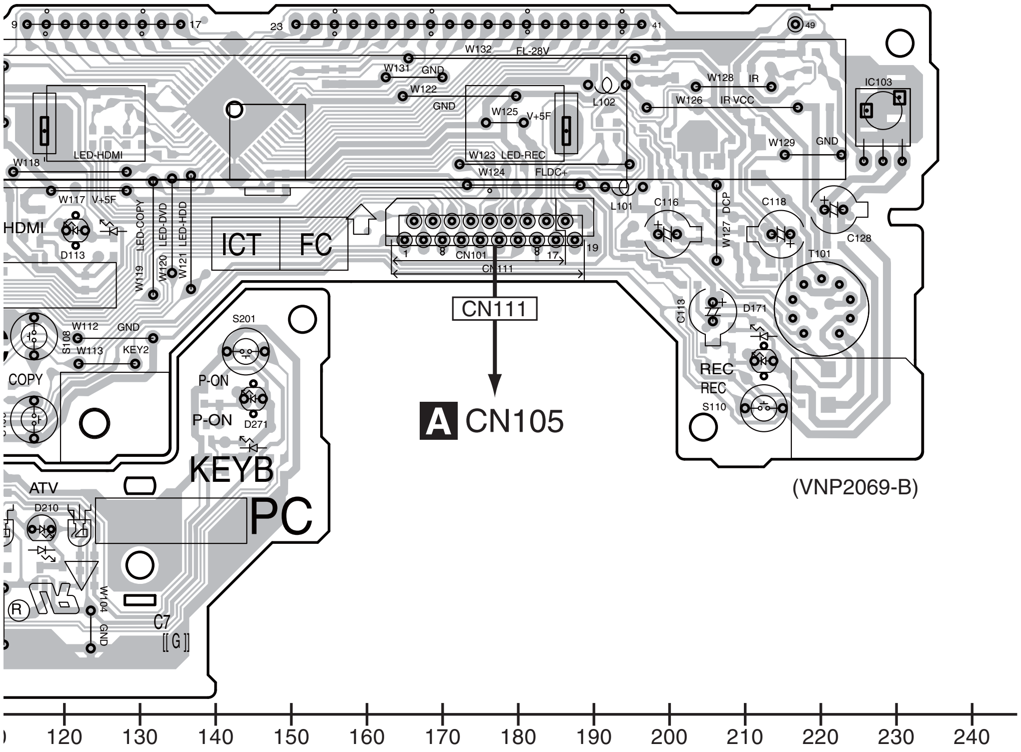
SIDE A



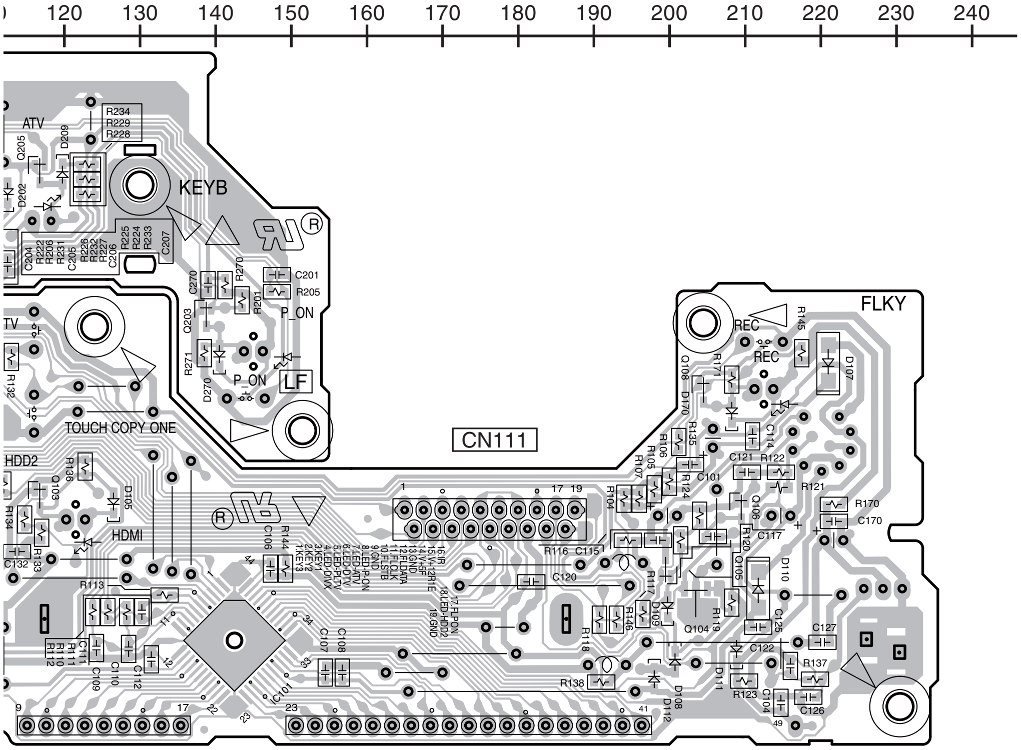
SIDE B



SIDE A



SIDE B



(VNP2069-B)

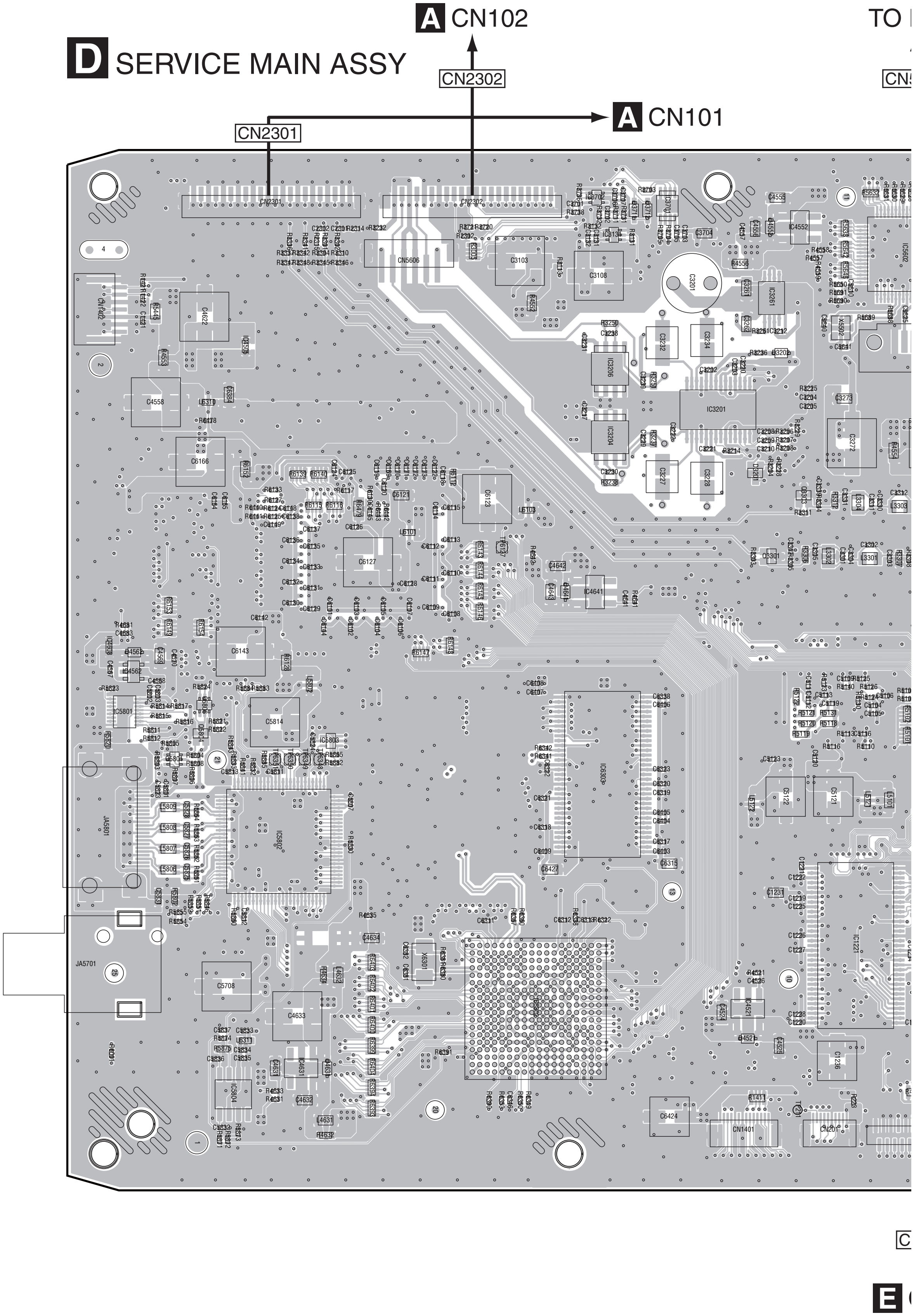
11.4 SERVICE MAIN ASSY

SIDE A

A

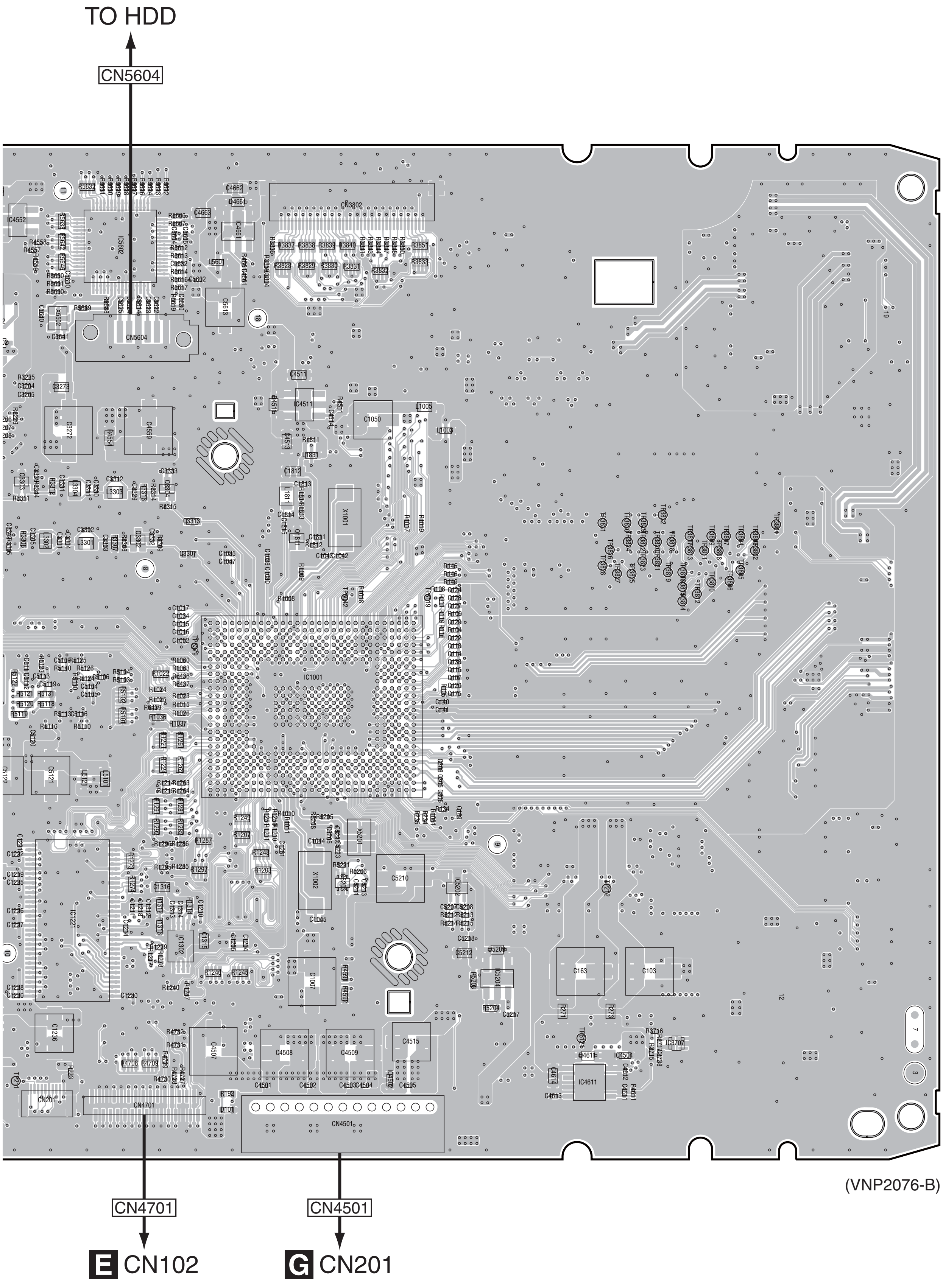
IC Q

IC3702 IC3701
IC4552 IC3131 IC4661 IC5602
IC3261
IC4505
IC3206
IC4511 IC3201 IC3204
Q3303 Q3304
Q3302 Q1811 Q3301
IC4641
IC4608
IC4562
Q5806
IC5801
IC1001 Q5804
IC5803
IC6303 Q5801
IC5802
IC5203 IC5202
IC1221
IC1302
IC6302 IC5204 IC4521
IC4631
IC3707
IC5804 IC4504
IC4502
IC4611



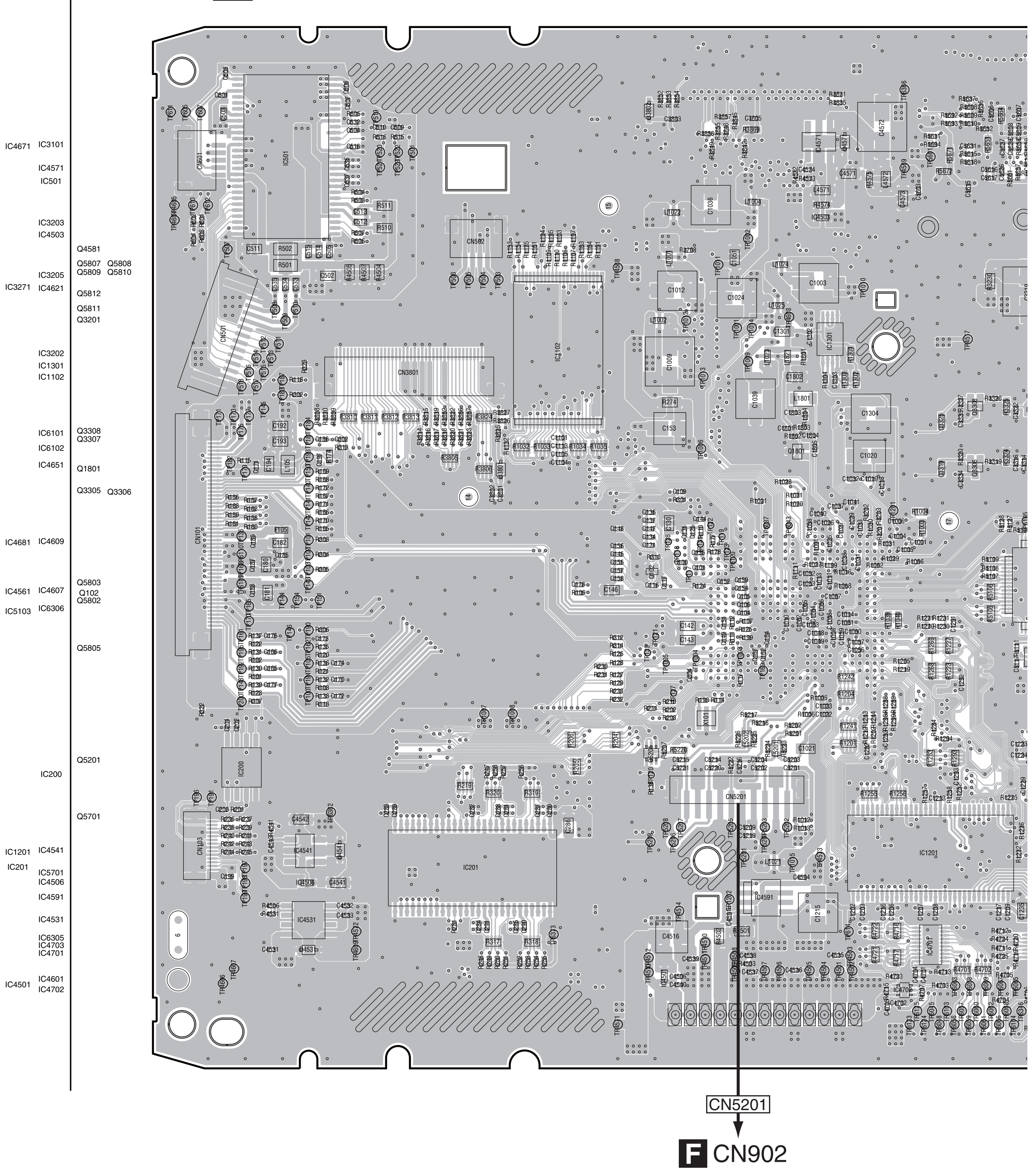
B C D E F

SIDE A

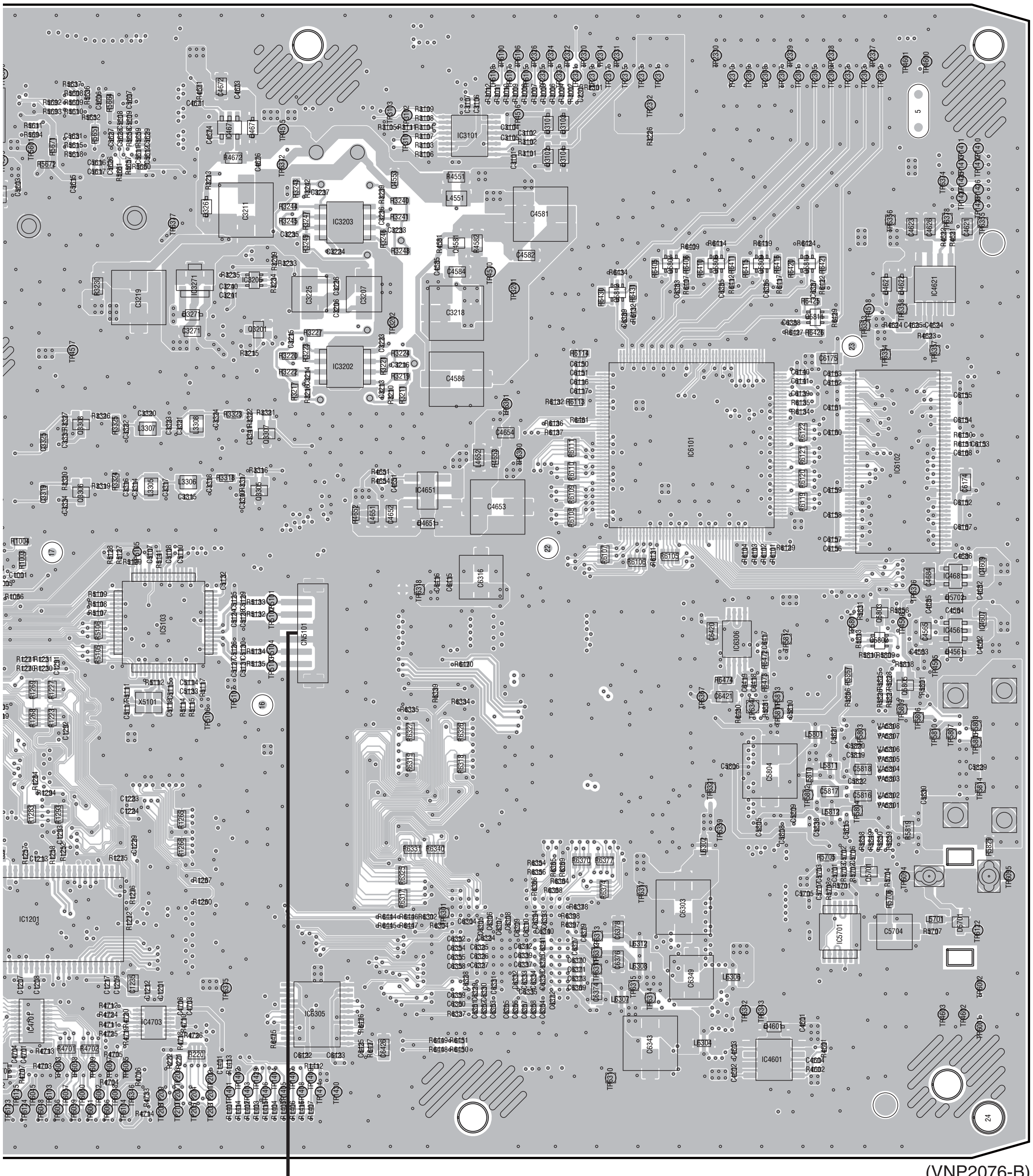

TO HDD
CN5604
CN5604
IC5602
IC1001
IC4611
CN4701
CN4501
CN3802
X1001
X1002
C5210
C163
C103
C4508
C4509
C4515
(VNP2076-B)
CN4701
CN4501
E CN102
G CN201

SIDE B

D SERVICE MAIN ASSY



SIDE B



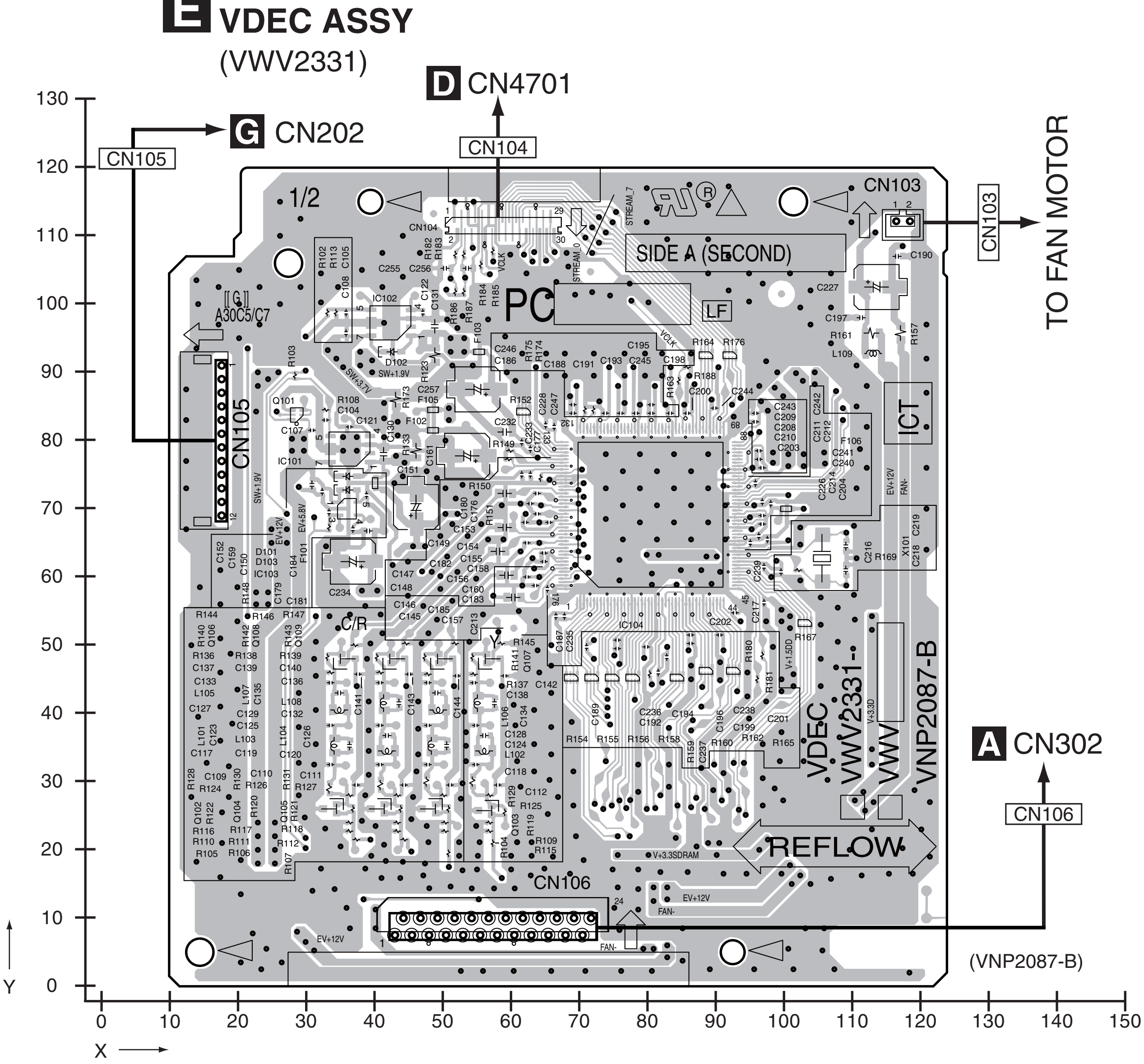
(VNP2076-B)

CN5101

F CN901

11.5 VDEC ASSY

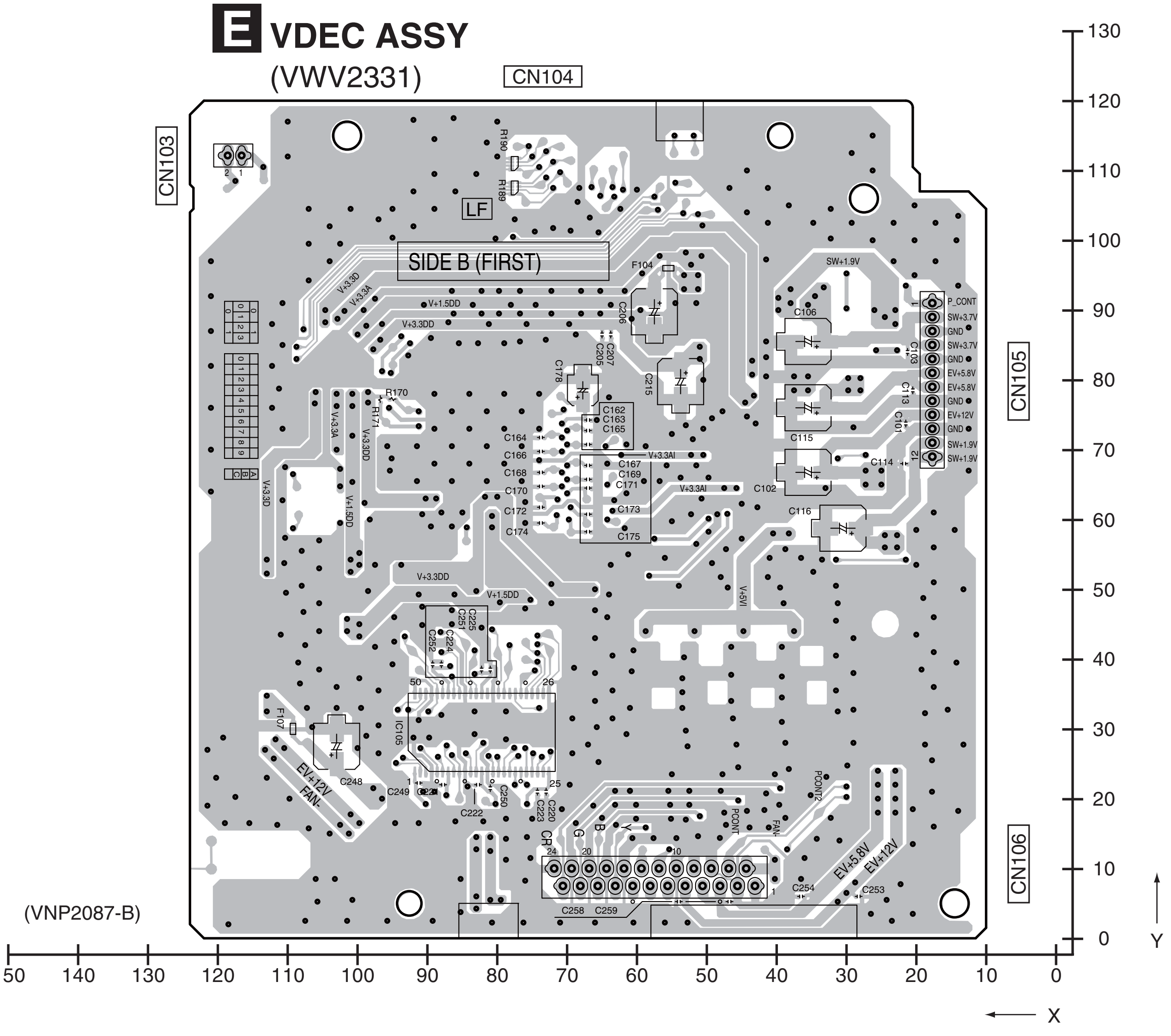
SIDE A **SIDE A**



SIDE B **SIDE B**

E VDEC ASSY

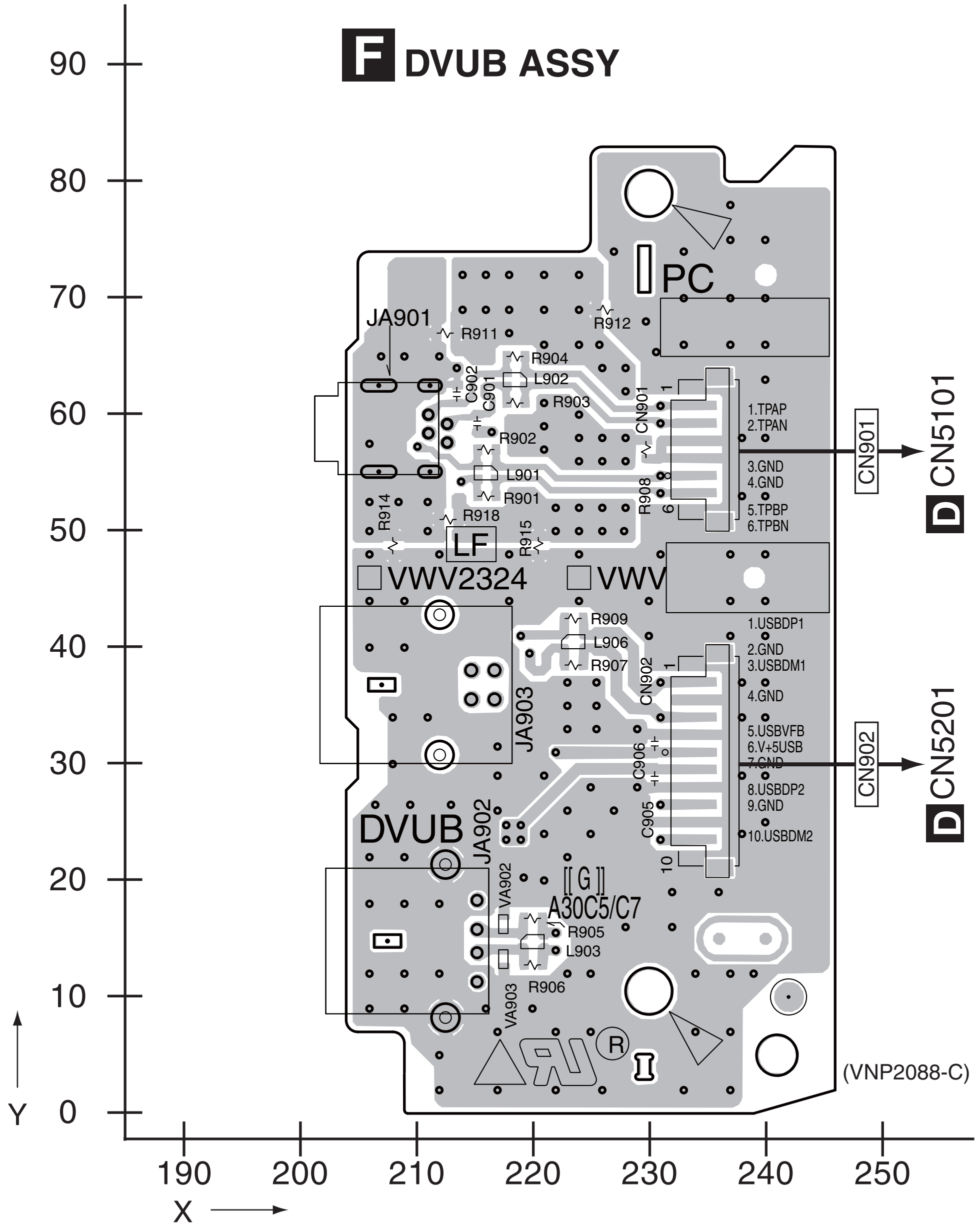
(VWV2331)



E **E**

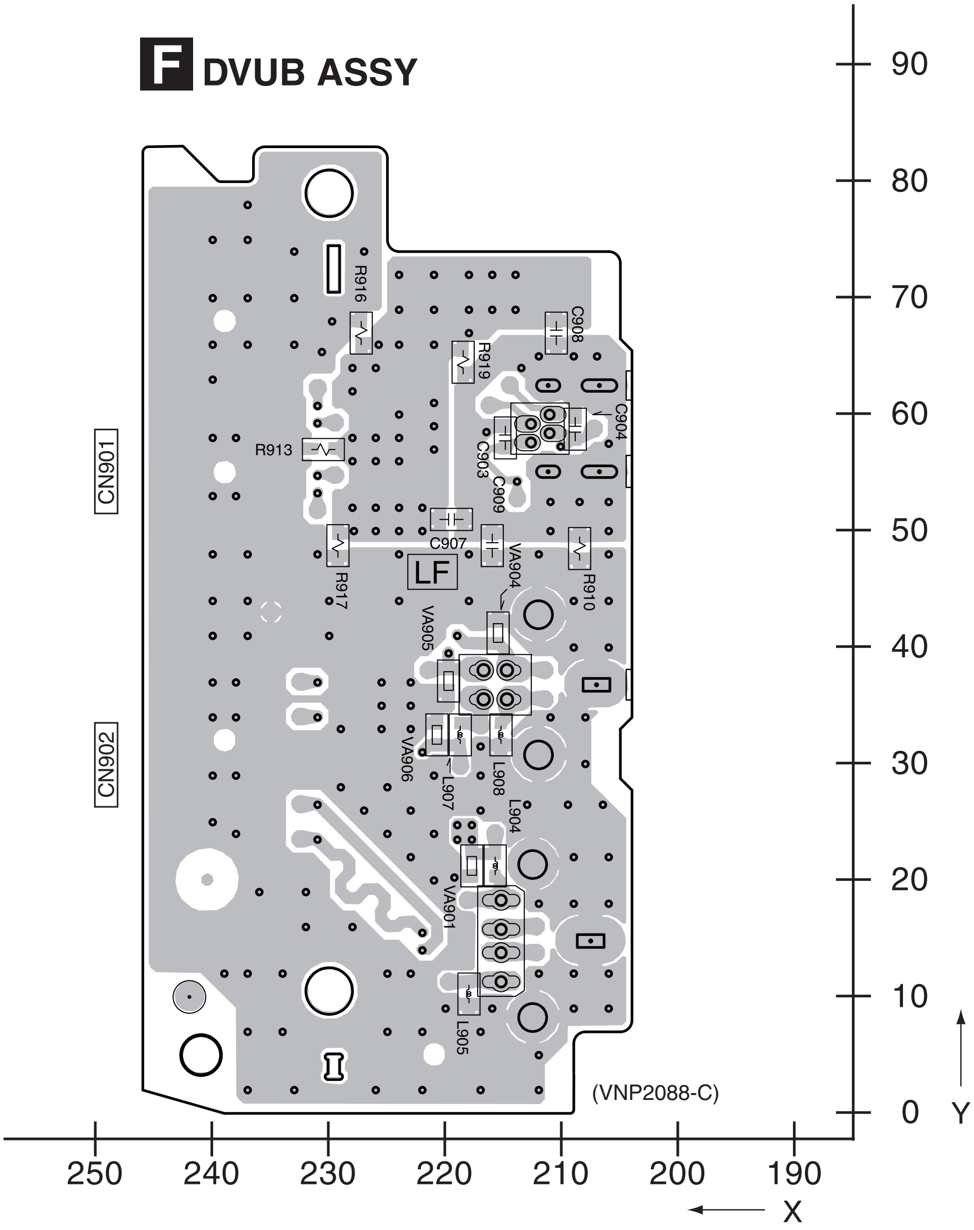
11.6 DVUB ASSY

SIDE A **SIDE A**



SIDE B **SIDE B**

F DVUB ASSY

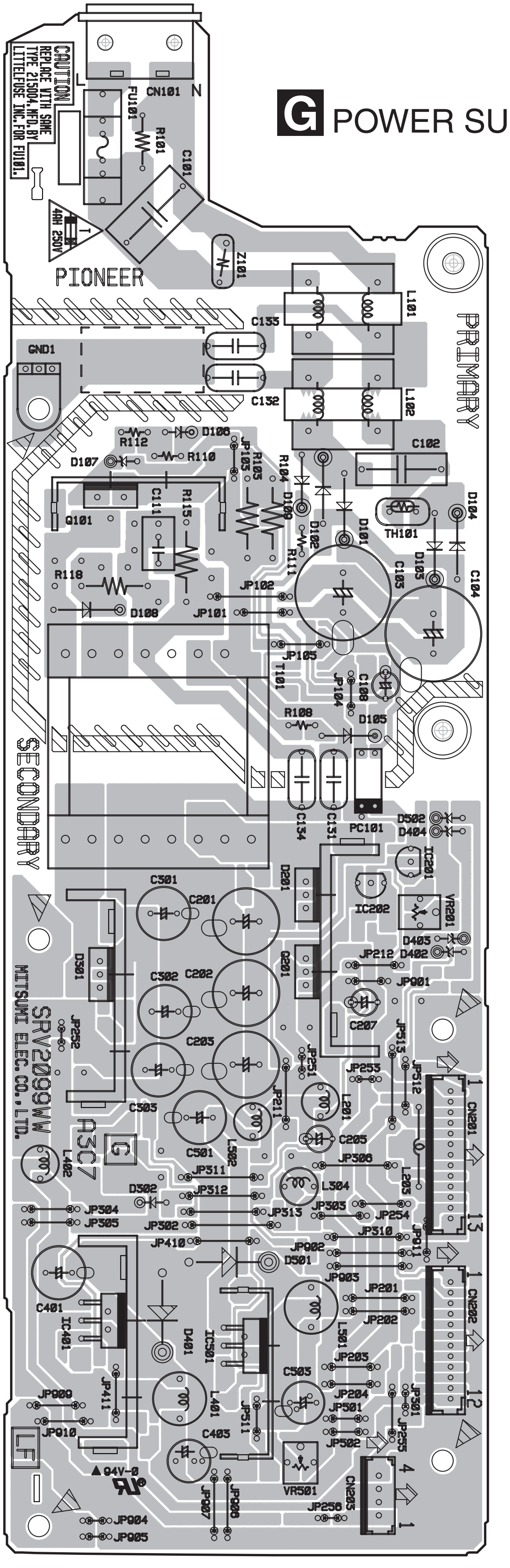


11.7 POWER SUPPLY ASSY

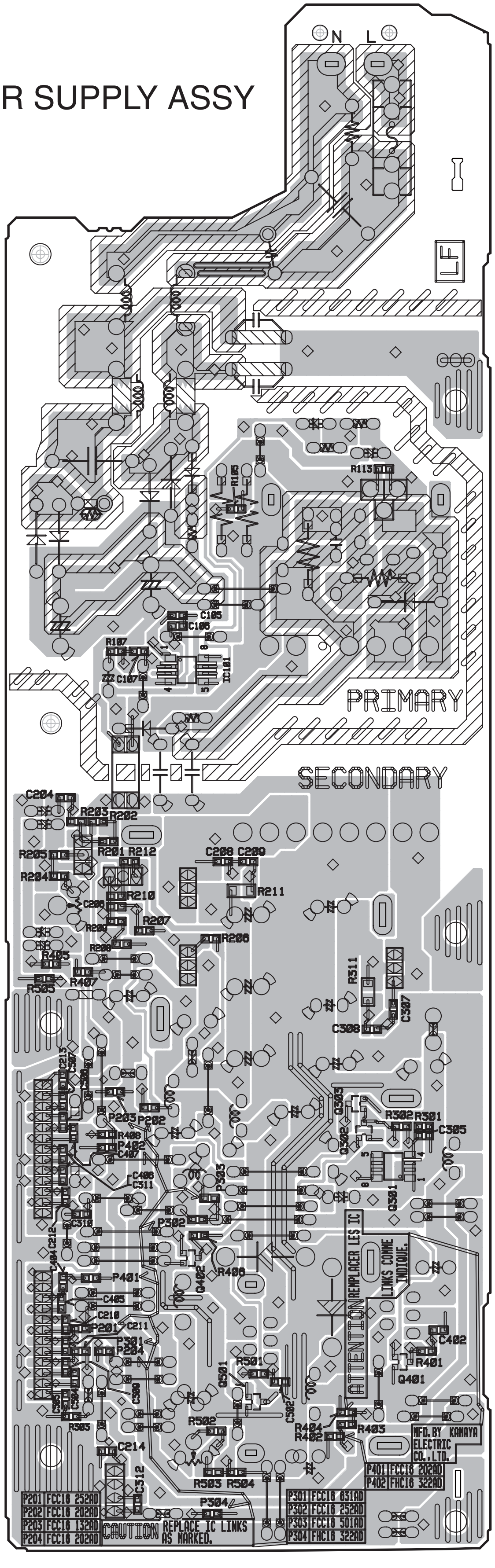
SIDE A

SIDE A

IC	Q
IC201 IC202	
	Q201
IC401 IC501	



G POWER SUPPLY ASSY



IC	Q
	Q303
	Q302
	Q301
	Q402
	Q401
	Q501

12. PCB PARTS LIST

NOTES:
- *Parts marked by "NSP" are generally unavailable because they are not in our Master Spare Parts List.*
- *The ⚠ mark found on some component parts indicates the importance of the safety factor of the part. Therefore, when replacing, be sure to use parts of identical designation.*
- *When ordering resistors, first convert resistance values into code form as shown in the following examples.*
  Ex.1 When there are 2 effective digits (any digit apart from 0), such as 560 ohm and 47k ohm (tolerance is shown by J=5%, and K=10%).
  560 Ω → 56 x 10^1 → 561 .... RD1/4PU$\boxed{5}\boxed{6}\boxed{1}$J
  47k Ω → 47 x 10^3 → 473 .... RD1/4PU$\boxed{4}\boxed{7}\boxed{3}$J
  0.5 Ω → R50 .... RN2H$\boxed{R}\boxed{5}\boxed{0}$K
  1 Ω → 1R0 .... RS1P$\boxed{1}\boxed{R}\boxed{0}$K
  Ex.2 When there are 3 effective digits (such as in high precision metal film resistors).
  5.62k Ω → 562 x 10^1 → 5621 .... RN1/4PC$\boxed{5}\boxed{6}\boxed{2}\boxed{1}$F
- *Meaning of the figures and others in the parentheses in the parts list.*
  Example) IC 301 is on the point (face A, 91 of x-axis, and 111 of y-axis) of the corresponding PC board.
  IC 301 (A, 91, 111) IC NJM2068V

LIST OF ASSEMBLIES

Mark	No.	Description	Part No.
NSP	1..	TUJB ASSY(DVR-LX70/TLXV)	VWM2455
NSP	1..	TUJB ASSY(DVR-LX70/TFXV)	VWM2456
	2..	SERVICE TURB ASSY (DVR-LX70/TLXV)	VXX3273
	2..	SERVICE TURB ASSY (DVR-LX70/TFXV)	VXX3274
	2..	DVUB ASSY	VWV2324
NSP	1..	FLKB ASSY	VWM2454
	2..	SERVICE FLKY ASSY	VXX3269
	2..	SERVICE FRJB ASSY	VXX3271
	1..	VDEC ASSY	VWV2331
	1..	SERVICE MAIN ASSY	VXX3268
⚠	1..	POWER SUPPLY ASSY	VWR1412

A SERVICE TURB ASSY (TLXV type)

MISCELLANEOUS

Mark	No.	Description	Part No.
	IC 101	(A,198,138) MICROCOMPUTER IC	PMC024A8
	IC 102	(A,223,186) RESET IC	BD4846G
	IC 104	(A,178,155) IC	TC7MB3257FK
⚠	IC 150	(B,228,147) FUSE	CEK1278
⚠	IC 317	(B,142,62) FUSE	CEK1278
	IC 401	(A,95,122) IC FOR DVD REC	HA118326APFR
	IC 402	(A,123,140) OP-AMP IC	BA4560RF
	IC 404	(B,55,48) DVD VIDEO AMP	LA73054
	IC 601	(A,116,173) MULTI SOUND DECODER	MSP3455G
	Q 101	(A,218,173) DIGITAL TRANSISTOR	DTC124EUA
	Q 201	(B,198,89) TRANSISTOR	2SD2114K
	Q 301	(A,166,165) TRANSISTOR	UMD2N
	Q 302	(B,162,172) TRANSISTOR	2SC4081
	Q 303	(A,168,179) TRANSISTOR	UMD2N
	Q 304	(A,163,179) TRANSISTOR	2SD2153
	Q 305	(A,185,68) TRANSISTOR	UMD2N
	Q 306	(B,188,69) TRANSISTOR	2SD2153
	Q 307	(A,176,74) TRANSISTOR	UMD2N
	Q 308	(B,175,78) TRANSISTOR	2SC2411K
	Q 309	(B,152,70) TRANSISTOR	2SC5876
	Q 310	(A,160,70) TRANSISTOR	2SC4081
	Q 311	(A,166,70) CHIP TRANSISTOR	HN1A01FU
	Q 403	(A,118,117) TRANSISTOR	2SA1576A
	Q 404	(A,104,71) TRANSISTOR	UMD2N
	Q 405	(A,118,120) TRANSISTOR	2SC4081
	Q 406	(A,42,78) TRANSISTOR	2SD2114K
	Q 407	(A,42,92) TRANSISTOR	2SD2114K
	Q 408	(A,42,73) TRANSISTOR	2SD2114K
	Q 409	(A,42,87) TRANSISTOR	2SD2114K
	Q 410	(A,117,112) TRANSISTOR	2SC4081
	Q 601	(B,68,169) TRANSISTOR	2SA1576A
	Q 602	(B,59,164) TRANSISTOR	2SA1576A
	Q 604	(A,135,175) TRANSISTOR	2SA1576A
	Q 605	(A,134,170) TRANSISTOR	2SA1576A
	Q 606	(B,85,183) TRANSISTOR	2SC4081
	D 101	(A,215,181) DIODE	1SS355
	D 102	(A,215,174) DIODE	1SS355
	D 103	(A,154,63) DIODE	1SS355
	D 104	(B,174,176) DIODE	1SR154-400
	D 110	(B,194,177) DIODE	1SS352
	D 201	(B,200,83) DIODE	1SS355
	D 301	(B,139,39) DIODE	UDZS15(B)
	D 302	(A,163,76) DIODE	UDZS9R1(B)
	D 303	(B,153,66) DIODE	1SS355
	D 304	(A,168,76) DIODE	1SS355
	D 401	(A,120,130) DIODE	UDZS11(B)
	D 402	(A,71,109) DIODE	UDZS6R8(B)
	D 418	(B,114,71) DIODE	1SS355
	D 419	(A,106,73) DIODE	1SS355
	D 701	(B,27,33) DIODE	1SS355
	L 201	(A,195,79) RADIAL INDUCTOR	ATH1109
	L 303	(B,170,173) INDUCTOR	CTF1399
	L 304	(A,147,67) RADIAL INDUCTOR	LFCA331J
	L 305	(B,158,66) INDUCTOR	CTF1399
	L 601	(B,31,173) INDUCTOR	CTF1399
	L 602	(A,62,170) INDUCTOR	CTF1399
	L 604	(B,44,173) INDUCTOR	CTF1306
	L 605	(B,47,172) INDUCTOR	CTF1306
	L 606	(B,91,168) INDUCTOR	CTF1399
	L 607	(B,83,169) COIL	LCYA101J2520
	L 608	(A,138,175) INDUCTOR	CTF1399
	L 609	(B,86,178) INDUCTOR	LCYA100J2520
	JA 402	(A,17,78) 9P PIN JACK	VKB1239
	JA 403	(A,17,132) JACK	VKB1253
	JA 701	(A,18,25) JACK	RKN1004

Mark	No.	Description	Part No.
KN	101	(A,100,35) WRAPPING TERMINAL	VNF1084
KN	102	(A,161,20) WRAPPING TERMINAL	VNF1084
KN	103	(A,229,92) WRAPPING TERMINAL	VNF1084
X	101	(A,205,156) CRYSTAL OSCILLATOR(15MHz)	CSS1653
X	102	(A,212,156) CRYSTAL RESONATOR (32 KHz)	VSS1197
X	601	(A,100,172) CERAMIC RESONATOR (18.432 MHZ)	VSS1189
CN	101	(A,56,26) 22P CONNECTOR	VKN1253
CN	102	(A,83,26) 22P CONNECTOR	VKN1253
CN	103	(A,233,161) 9P CONNECTOR	VKN2015
CN	105	(A,232,150) CONNECTOR	9604S-19C
CN	106	(A,235,107) CONNECTOR	HLEM11S-1
CN	302	(A,120,27) CONNECTOR	HLEM24R-1
	401	2P 4PIN MINIDIN(S)	AKP1235
U	601	(A,26,178) TV TUNER PACK	VXF1105
BT	101	(A,185,179) LITHIUM BATTERY	VEM1037

RESISTORS

Mark	No.	Description	Part No.
R	101	(A,183,133)	RS1/16S101J
R	102	(A,183,131)	RS1/16S101J
R	103	(A,185,126)	RS1/16S101J
R	104	(A,224,180)	RS1/16S473J
R	105	(A,220,159)	RS1/16S101J
R	106	(A,221,166)	RS1/16S0R0J
R	107	(A,223,181)	RS1/16S103J
R	109	(B,205,146)	RS1/16S331J
R	110	(B,198,145)	RS1/16S101J
R	111	(A,219,170)	RS1/16S101J
R	112	(A,220,175)	RS1/16S103J
R	113	(A,217,176)	RS1/16S0R0J
R	116	(B,212,159)	RS1/16S0R0J
R	117	(B,201,153)	RS1/16S105J
R	118	(B,198,154)	RS1/16S0R0J
R	123	(A,193,166)	RS1/16S101J
R	124	(A,191,165)	RS1/16S101J
R	126	(A,191,155)	RS1/16S101J
R	129	(A,190,164)	RS1/16S101J
R	130	(A,234,157)	RS1/16S0R0J
R	131	(A,188,154)	RS1/16S104J
R	134	(A,185,153)	RS1/16S102J
R	135	(B,187,144)	RS1/16S102J
R	136	(A,185,155)	RS1/16S102J
R	139	(A,178,164)	RS1/16S682J
R	140	(A,178,160)	RS1/16S470J
R	141	(A,181,164)	RS1/16S682J
R	142	(A,181,160)	RS1/16S470J
R	143	(A,183,150)	RS1/16S101J
R	144	(A,181,143)	RS1/16S0R0J
R	145	(A,183,136)	RS1/16S104J
R	149	(A,186,124)	RS1/16S0R0J
R	150	(A,190,124)	RS1/16S0R0J
R	151	(B,184,132)	RS1/16S0R0J
R	152	(A,191,114)	RS1/16S101J
R	153	(A,192,119)	RS1/16S101J
R	154	(B,203,128)	RS1/16S101J
R	155	(A,194,115)	RS1/16S101J
R	156	(A,196,123)	RS1/16S101J
R	157	(A,198,124)	RS1/16S104J
R	158	(A,199,123)	RS1/16S104J
R	159	(A,201,122)	RS1/16S0R0J
R	160	(A,200,127)	RS1/16S101J
R	161	(A,197,117)	RS1/16S0R0J

Mark	No.	Description	Part No.
R	165	(A,204,118)	RS1/16S104J
R	167	(A,203,114)	RS1/16S101J
R	168	(A,207,119)	RS1/16S181J
R	170	(A,202,127)	RS1/16S104J
R	171	(A,209,121)	RS1/16S101J
R	172	(A,209,122)	RS1/16S101J
R	173	(A,209,124)	RS1/16S104J
R	174	(A,211,124)	RS1/16S104J
R	175	(A,209,119)	RS1/16S331J
R	176	(B,221,133)	RS1/16S102J
R	180	(A,219,140)	RS1/16S101J
R	181	(A,215,140)	RS1/16S101J
R	182	(A,218,141)	RS1/16S101J
R	183	(A,215,142)	RS1/16S101J
R	184	(A,218,143)	RS1/16S101J
R	185	(A,215,144)	RS1/16S101J
R	186	(A,218,145)	RS1/16S101J
R	187	(A,215,146)	RS1/16S101J
R	188	(B,207,145)	RS1/16S331J
R	189	(B,213,143)	RS1/16S471J
R	191	(A,184,144)	RS1/16S0R0J
R	192	(A,184,149)	RS1/16S0R0J
R	193	(B,223,166)	RS1/16S104J
R	194	(B,223,168)	RS1/16S104J
R	195	(B,223,164)	RS1/16S104J
R	196	(B,223,172)	RS1/16S101J
R	199	(A,206,115)	RS1/16S101J
R	200	(B,211,143)	RS1/16S101J
R	201	(A,184,142)	RS1/16S101J
R	204	(A,181,141)	RS1/16S101J
R	205	(B,178,138)	RS1/16S101J
R	211	(B,190,179)	RS1/16S102J
R	212	(A,189,101)	RS1/16S0R0J
R	213	(A,189,157)	RS1/16S103J
R	218	(B,208,86)	RS1/10S0R0J
R	219	(A,194,90)	RS1/16S332J
R	220	(A,198,91)	RS1/16S222J
R	221	(A,179,151)	RS1/16S101J
R	222	(A,181,145)	RS1/16S0R0J
R	223	(A,179,160)	RS1/16S0R0J
R	224	(A,176,160)	RS1/16S0R0J
R	225	(A,196,168)	RS1/16S333J
R	226	(A,197,166)	RS1/16S273J
R	228	(A,194,163)	RS1/16S0R0J
R	233	(A,60,28)	RS1/16S0R0J
R	234	(B,62,89)	RS1/16S0R0J
R	235	(B,62,76)	RS1/16S0R0J
R	236	(B,48,93)	RS1/16S0R0J
R	237	(A,183,134)	RS1/16S0R0J
R	251	(B,196,74)	RS1/10S0R0J
R	302	(B,149,57)	RS1/10S0R0J
R	303	(B,152,57)	RS1/10S0R0J
R	304	(B,170,169)	RS1/16S101J
R	305	(B,168,181)	RS1/16S330J
R	306	(B,185,65)	RS1/16S330J
R	307	(A,168,82)	RS1/10S0R0J
R	308	(A,168,80)	RS1/10S0R0J
R	309	(B,177,67)	RS1/16S152J
R	310	(B,149,69)	RS1/16S472J
R	311	(B,149,73)	RS1/16S821J

Mark	No.	Description	Part No.
R	312	(A,160,68)	RS1/16S103J
R	313	(B,165,69)	RS1/16S184J
R	314	(B,166,76)	RS1/16S223J
R	315	(B,162,70)	RS1/16S1003F
R	316	(B,159,71)	RS1/16S2202F
R	318	(B,169,178)	RS1/16S0R0J
R	400	(B,26,62)	RS1/16S0R0J
R	401	(A,117,122)	RS1/10S0R0J
R	402	(B,65,21)	RS1/16S0R0J
R	403	(B,58,21)	RS1/16S0R0J
R	404	(A,120,127)	RS1/10S0R0J
R	405	(A,69,80)	RS1/16S0R0J
R	406	(A,69,85)	RS1/16S0R0J
R	407	(B,106,97)	RS1/10S0R0J
R	408	(A,103,153)	RS1/16S471J
R	410	(B,103,118)	RS1/16S103J
R	413	(A,101,153)	RS1/16S471J
R	414	(A,96,144)	RS1/16S471J
R	415	(A,94,144)	RS1/16S471J
R	416	(A,92,144)	RS1/16S471J
R	417	(A,90,147)	RS1/16S471J
R	418	(A,88,147)	RS1/16S471J
R	419	(A,86,144)	RS1/16S471J
R	421	(A,89,136)	RS1/16S105J
R	422	(A,107,143)	RS1/16S103J
R	423	(A,84,142)	RS1/10S75R0F
R	424	(A,81,134)	RS1/16S105J
R	425	(B,89,120)	RS1/16S104J
R	426	(A,68,138)	RS1/10S75R0F
R	428	(B,86,125)	RS1/16S0R0J
R	430	(A,80,129)	RS1/16S105J
R	431	(A,79,123)	RS1/16S105J
R	432	(A,82,123)	RS1/16S105J
R	433	(B,48,60)	RS1/10S75R0F
R	434	(B,41,60)	RS1/10S0R0J
R	436	(A,96,106)	RS1/16S101J
R	437	(A,95,106)	RS1/16S101J
R	438	(A,73,111)	RS1/10S0R0J
R	441	(A,65,127)	RS1/10S75R0F
R	442	(A,66,120)	RS1/10S75R0F
R	443	(A,68,135)	RS1/10S75R0F
R	444	(A,76,128)	RS1/10S75R0F
R	445	(A,72,131)	RS1/10S75R0F
R	446	(A,69,132)	RS1/10S75R0F
R	447	(A,70,124)	RS1/10S75R0F
R	448	(A,73,114)	RS1/10S0R0J
R	450	(B,39,143)	RS1/16S101J
R	451	(B,41,143)	RS1/16S104J
R	452	(B,44,157)	RS1/16S104J
R	453	(A,119,145)	RS1/16S8201F
R	454	(A,110,135)	RS1/16S1002F
R	455	(A,114,118)	RS1/16S470J
R	457	(A,111,109)	RS1/16S0R0J
R	458	(A,121,117)	RS1/16S471J
R	459	(A,117,115)	RS1/16S471J
R	460	(A,114,120)	RS1/16S470J
R	461	(A,115,109)	RS1/16S681J
R	462	(A,110,133)	RS1/16S1002F
R	463	(A,119,134)	RS1/16S8201F
R	464	(B,39,39)	RS1/10S75R0F
R	465	(A,113,113)	RS1/16S471J
R	466	(B,37,39)	RS1/10S0R0J
R	467	(B,42,56) CHIP TYPE RESISTOR	RS1/10S68R0F
R	468	(B,39,45)	RS1/10S75R0F
R	469	(B,37,45)	RS1/10S0R0J
R	470	(B,42,50) CHIP TYPE RESISTOR	RS1/10S68R0F
R	471	(B,39,50)	RS1/10S3R9J
R	472	(B,57,67)	RS1/10S75R0F
R	473	(B,54,69)	RS1/10S3R9J
R	474	(B,58,83)	RS1/10S75R0F
R	475	(B,55,84)	RS1/10S0R0J
R	476	(B,57,96)	RS1/10S75R0F
R	477	(B,55,96)	RS1/10S0R0J
R	478	(B,48,63)	RS1/10S75R0F
R	479	(B,41,77)	RS1/16S471J
R	480	(B,41,63)	RS1/10S0R0J
R	481	(B,39,56)	RS1/10S3R9J
R	482	(B,36,77)	RS1/16S101J
R	483	(B,41,74)	RS1/16S471J
R	484	(A,43,82)	RS1/16S102J
R	485	(B,47,74)	RS1/16S223J
R	486	(A,42,96)	RS1/16S102J
R	487	(A,41,69)	RS1/16S102J
R	488	(B,41,91)	RS1/16S471J
R	489	(B,47,87)	RS1/16S223J
R	490	(B,36,91)	RS1/16S101J
R	491	(A,41,83)	RS1/16S102J
R	492	(B,43,88)	RS1/16S471J
R	493	(B,36,74)	RS1/16S101J
R	494	(B,36,88)	RS1/16S101J
R	495	(B,39,157)	RS1/16S101J
R	496	(B,44,150)	RS1/16S104J
R	497	(B,39,150)	RS1/16S101J
R	498	(B,39,162)	RS1/16S101J
R	499	(B,44,162)	RS1/16S104J
R	602	(B,64,170)	RS1/16S102J
R	603	(B,51,174)	RS1/16S0R0J
R	605	(B,62,169)	RS1/16S103J
R	606	(B,62,164)	RS1/16S103J
R	607	(B,56,168)	RS1/16S102J
R	608	(B,29,183)	RS1/16S0R0J
R	609	(B,26,174)	RS1/16S0R0J
R	610	(B,53,173)	RS1/16S0R0J
R	611	(B,58,174)	RS1/16S0R0J
R	615	(A,117,183)	RS1/16S0R0J
R	616	(B,102,172)	RS1/16S0R0J
R	619	(A,108,168)	RS1/16S103J
R	620	(A,120,162)	RS1/16S0R0J
R	621	(A,111,163)	RS1/16S101J
R	622	(A,114,163)	RS1/16S101J
R	623	(B,137,176)	RS1/16S102J
R	624	(A,127,174)	RS1/16S332J
R	625	(A,129,175)	RS1/16S332J
R	626	(B,128,173)	RS1/16S102J
R	627	(A,129,172)	RS1/16S332J
R	628	(A,131,171)	RS1/16S332J
R	630	(B,90,178)	RS1/16S331J
R	631	(B,83,180)	RS1/16S472J
R	632	(B,76,183)	RS1/16S220J
R	633	(B,82,182)	RS1/16S101J

Mark	No.	Description	Part No.
R	634 (B,76,179)		RS1/16S222J
R	635 (B,66,175)		RS1/16S0R0J
R	701 (B,34,35)		RS1/16S224J
R	702 (B,25,31)		RS1/16S221J
R	704 (B,29,32)		RS1/16S221J
R	801 (B,67,39)		RS1/16S101J
R	802 (B,70,40)		RS1/16S104J
R	803 (B,74,41)		RS1/16S104J
R	820 (B,67,72)		RS1/10S0R0J
R	821 (A,61,45)		RS1/16S0R0J
R	822 (A,58,45)		RS1/16S0R0J
R	823 (B,73,38)		RS1/16S101J
R	824 (B,78,40)		RS1/16S101J

CAPACITORS

Mark	No.	Description	Part No.
C	104 (A,216,150)		CEAT220M25
C	105 (A,221,183)		CKSRYF104Z25
C	106 (A,224,183)		CKSRYF104Z25
C	107 (B,203,146)		CCSRCH331J50
C	109 (A,216,171)		CKSRYF104Z25
C	110 (A,217,181)		CKSRYB105K10
C	111 (B,215,159)		CCSRCH100D50
C	112 (B,212,161)		CCSRCH120J50
C	113 (A,197,152)		CKSRYF105Z10
C	114 (B,205,160)		CCSRCH150J50
C	115 (B,201,160)		CCSRCH150J50
C	120 (B,171,179)		CKSRYF104Z25
C	121 (A,235,156)		CKSRYF105Z10
C	122 (B,180,176)		CKSRYF105Z10
C	123 (A,180,172)		CEAT221M6R3
C	126 (A,183,139)		CKSRYF104Z25
C	131 (A,192,128)		CKSRYF104Z25
C	132 (B,181,133)		CKSRYF104Z25
C	133 (A,189,117)		CKSRYF104Z25
C	134 (A,200,115)		CKSRYF104Z25
C	136 (A,209,127)		CKSRYF105Z10
C	138 (A,221,130)		CEAT2R2M50
C	139 (A,213,133)		CKSRYF104Z25
C	140 (A,212,137)		CKSRYF104Z25
C	141 (A,174,160)		CKSRYF105Z10
C	142 (A,174,161)		CCSRCH102J50
C	147 (A,232,157)		CKSRYF104Z25
C	152 (A,193,101)		CKSRYF105Z10
C	153 (B,226,150)		CKSRYF105Z16
C	154 (B,228,143)		CKSRYF104Z25
C	155 (A,237,156)		CCSRCH102J50
C	158 (A,227,170)		DCH1201
C	159 (B,239,155)		DCH1201
C	166 (A,199,151)		CCSRCH102J50
C	167 (A,184,139)		CCSRCH102J50
C	168 (A,208,128)		CCSRCH102J50
C	169 (A,221,138)		CCSRCH102J50
C	202 (A,211,83)		CKSRYF104Z25
C	204 (A,210,86)		CEAT101M16
C	205 (A,210,80)		CEAT220M25
C	206 (A,193,90)		CCSRCH471J50
C	208 (B,196,69)		CKSRYB104K16
C	211 (A,188,155)		CKSRYF104Z25
C	301 (B,138,34)		CKSRYF104Z25
C	302 (B,145,33)		CKSRYF104Z25
C	303 (A,139,59)		CEAT101M16
C	304 (A,147,54)		CEAT471M10
C	305 (B,165,170)		CKSRYF104Z25
C	306 (B,160,168)		CKSRYF104Z25
C	307 (A,163,168)		CEAT101M16
C	308 (A,158,173)		CEAT101M16
C	309 (B,166,179)		CKSRYF104Z25
C	310 (A,164,186)		CKSRYF104Z25
C	311 (A,167,185)		CEAT221M16
C	312 (A,161,185)		CEAT101M16
C	313 (B,182,64)		CKSRYF105Z10
C	314 (B,182,73)		CKSRYF104Z25
C	315 (A,182,70)		CEAT101M16
C	316 (A,181,79)		CEAT101M16
C	317 (B,173,66)		CKSRYF104Z25
C	318 (B,171,77)		CKSRYF104Z25
C	319 (A,172,74)		CEAT101M16
C	320 (A,181,86)		CEAT101M16
C	321 (B,141,64)		CKSRYF104Z25
C	322 (B,147,70)		CCSRCH101J50
C	323 (B,154,70)	CERAMIC CAPACITOR	CKSQYF105Z50
C	324 (B,167,74)		CKSRYF104Z25
C	326 (A,163,65)		CEAT100M50
C	328 (B,158,63)		CKSRYF104Z50
C	329 (B,159,184)		CKSRYF104Z25
C	331 (A,165,83)		DCH1201
C	333 (A,163,79)		DCH1201
C	335 (B,145,35)		CCSRCH102J50
C	336 (B,138,37)		CCSRCH102J50
C	401 (A,106,127)		CKSRYF105Z10
C	402 (A,108,131)		CKSRYF104Z25
C	403 (A,106,130)		CKSRYF104Z25
C	404 (A,106,122)		CKSRYF105Z10
C	406 (A,107,116)		CKSRYF104Z25
C	407 (A,110,115)		CKSRYF104Z25
C	408 (A,107,114)		CKSRYF104Z25
C	409 (A,110,113)		CKSRYF104Z25
C	410 (A,107,112)		CKSRYF104Z25
C	411 (A,103,141)		CKSRYB105K10
C	412 (A,101,141)		CKSRYB105K10
C	413 (B,103,122)		CKSRYB104K16
C	414 (A,109,143)		CKSRYF104Z25
C	415 (A,109,148)		CKSRYF104Z25
C	418 (A,99,140)		CKSRYF105Z10
C	419 (A,96,141)		CKSRYB105K10
C	420 (A,94,141)		CKSRYB105K10
C	421 (A,92,141)		CKSRYB105K10
C	422 (A,90,144)		CKSRYB105K10
C	423 (A,88,144)		CKSRYB105K10
C	424 (A,86,141)		CKSRYB105K10
C	425 (A,84,140)		CKSRYB105K10
C	426 (A,73,138)		CKSRYB104K16
C	427 (A,65,138)		CKSRYB103K50
C	428 (B,86,123)		CKSRYB104K16
C	429 (A,73,135)		CKSRYB105K10
C	430 (A,73,133)		CKSRYB104K16
C	431 (A,82,127)		CKSRYB104K16
C	432 (A,73,126)		CKSRYB105K10
C	434 (A,83,118)		CKSRYB104K16
C	435 (A,105,106)		CKSRYF104Z25

Mark	No.	Description	Part No.
	C 436	(A,104,106)	CKSRYF104Z25
	C 437	(A,102,106)	CKSRYF104Z25
	C 438	(A,99,107)	CKSRYF105Z10
	C 439	(A,90,108)	CKSRYB104K16
	C 440	(B,88,115)	CKSRYB104K16
	C 441	(A,84,116)	CKSRYF105Z10
	C 442	(A,84,113)	CKSRYF104Z25
	C 443	(A,77,131)	CKSRYB105K10
	C 444	(A,75,124)	CKSRYB105K10
	C 445	(A,72,117)	CKSRYB105K10
	C 446	(A,73,122)	CKSRYB105K10
	C 447	(A,72,128)	CKSRYB103K50
	C 448	(A,66,131)	CKSRYB103K50
	C 452	(A,115,127)	CEAT101M10
	C 453	(A,110,121)	CEAT101M10
	C 454	(A,102,96)	CEAT101M10
	C 455	(A,99,145)	CEAT4R7M50
	C 456	(A,77,134)	CEAT1R0M50
	C 457	(A,78,120)	CEAT100M50
	C 458	(A,78,111)	CEAT101M10
	C 459	(A,123,118)	CKSRYF105Z10
	C 460	(A,123,120)	CKSRYF105Z10
	C 461	(B,44,143)	CCSRCH471J50
	C 462	(B,41,157)	CCSRCH471J50
	C 463	(B,41,150)	CCSRCH471J50
	C 464	(A,127,135)	CKSRYF104Z25
	C 465	(B,41,162)	CCSRCH471J50
	C 467	(A,120,111)	CKSRYF105Z10
	C 468	(A,106,148)	CKSRYF104Z25
	C 469	(A,105,142)	CKSRYF104Z25
	C 470	(B,34,143)	CCSRCH102J50
	C 471	(A,118,142)	CEAT100M50
	C 472	(A,123,147)	CEAT100M50
	C 473	(A,130,129)	CEAT101M16
	C 474	(A,118,137)	CEAT100M50
	C 475	(A,124,134)	CEAT100M50
	C 476	(A,53,51)	CKSRYB103K50
	C 477	(B,34,157)	CCSRCH102J50
	C 478	(A,60,61) ELECT. CAPACITOR	CEAT102M6R3
	C 482	(B,33,77)	CCSRCH471J50
	C 483	(A,45,55) ELECT. CAPACITOR	CEAT102M6R3
	C 484	(B,32,92)	CCSRCH471J50
	C 487	(A,50,69) ELECT. CAPACITOR	CEAT102M6R3
	C 488	(A,51,83) ELECT. CAPACITOR	CEAT471M6R3
	C 489	(A,51,96) ELECT. CAPACITOR	CEAT471M6R3
	C 491	(A,51,76)	CEAT470M16
	C 492	(A,111,71)	CEAT221M6R3
	C 493	(B,33,73)	CCSRCH471J50
	C 495	(A,51,90)	CEAT470M16
	C 496	(A,83,120)	CKSRYF104Z25
	C 497	(B,33,87)	CCSRCH471J50
	C 498	(B,34,150)	CCSRCH102J50
	C 499	(B,33,162)	CCSRCH102J50
	C 602	(B,28,172)	CKSRYB222K50
	C 603	(B,53,169)	CKSRYB222K50
	C 604	(B,61,174)	CCSRCH101J50
	C 605	(B,44,175)	CCSRCH100D50
	C 606	(B,48,175)	CCSRCH100D50
	C 607	(A,78,168)	CEAT1R0M50
	C 609	(A,55,170)	CEAT101M10
	C 611	(A,50,169)	CEAT220M25
	C 613	(B,89,168)	CKSRYF105Z10
	C 614	(B,83,174)	CKSRYF104Z25
	C 615	(B,88,178)	CCSRCH101J50
	C 616	(B,82,177)	CKSRYB103K50
	C 617	(A,114,181)	CKSRYF104Z25
	C 618	(A,119,181)	CKSRYF104Z25
	C 619	(A,130,179)	CKSRYF104Z25
	C 620	(A,107,178)	CKSRYF105Z10
	C 621	(B,89,183)	CCSRCH560J50
	C 622	(A,107,176)	CCSRCH560J50
	C 623	(B,97,177)	CCSRCH5R0C50
	C 624	(B,97,171)	CCSRCH5R0C50
	C 625	(B,115,169)	CKSRYF105Z10
	C 626	(B,137,179)	CKSRYF104Z25
	C 627	(B,126,175)	CKSRYF104Z25
	C 628	(A,132,174)	CKSRYB103K50
	C 629	(A,125,174)	CKSRYB392K50
	C 630	(A,131,176)	CCSRCH561J50
	C 631	(A,129,170)	CKSRYB103K50
	C 632	(A,125,171)	CKSRYB392K50
	C 633	(A,133,172)	CCSRCH561J50
	C 635	(A,111,165)	CCSRCH220J50
	C 636	(A,114,165)	CCSRCH220J50
	C 638	(A,114,184)	CEAT100M50
	C 639	(A,119,184)	CEAT3R3M50
	C 640	(A,86,174)	CEAT101M10
	C 641	(A,126,178)	CEAT100M50
	C 642	(A,134,178)	CEAT101M10
	C 643	(A,106,181)	CEAT101M10
	C 701	(B,42,36)	CKSRYF105Z10
	C 702	(B,29,29)	CCSRCH681J50
	C 703	(B,22,32)	CKSRYF104Z25
	C 801	(A,67,67) ELECT. CAPACITOR	CEAT471M6R3
	C 802	(B,62,41)	CKSRYF104Z25
	C 803	(A,60,39)	CKSRYB104K16
	C 804	(A,56,42)	CKSRYB104K16
	C 805	(A,57,38)	CKSRYB104K16
	C 806	(A,53,39)	CKSRYB104K16
	C 807	(A,50,39)	CKSRYB104K16
	C 808	(A,48,39)	CKSRYB104K16
	C 809	(A,45,40)	CEAT101M10
	C 810	(B,45,43)	CKSRYF104Z25
	C 811	(B,61,56)	CKSRYF104Z25
	C 812	(A,58,54)	CKSRYF104Z25
	C 813	(B,53,56)	CKSRYF104Z25

A SERVICE TURB ASSY (TFXV type)

MISCELLANEOUS

Mark	No.	Description	Part No.
	IC 101	(A,198,138) MICROCOMPUTER IC	PMC024A8
	IC 102	(A,223,186) RESET IC	BD4846G
	IC 104	(A,178,155) IC	TC7MB3257FK
⚠	IC 150	(B,228,147) FUSE	CEK1278
⚠	IC 317	(B,142,62) FUSE	CEK1278
	IC 401	(A,95,122) IC FOR DVD REC	HA118326APFR
	IC 402	(A,123,140) OP-AMP IC	BA4560RF
	IC 404	(B,55,48) DVD VIDEO AMP	LA73054
	Q 101	(A,218,173) DIGITAL TRANSISTOR	DTC124EUA
	Q 201	(B,198,89) TRANSISTOR	2SD2114K

Mark	No.	Description	Part No.
	Q 303	(A,168,179) TRANSISTOR	UMD2N
	Q 304	(A,163,179) TRANSISTOR	2SD2153
	Q 305	(A,185,68) TRANSISTOR	UMD2N
	Q 306	(B,188,69) TRANSISTOR	2SD2153
	Q 307	(A,176,74) TRANSISTOR	UMD2N
	Q 308	(B,175,78) TRANSISTOR	2SC2411K
	Q 309	(B,152,70) TRANSISTOR	2SC5876
	Q 310	(A,160,70) TRANSISTOR	2SC4081
	Q 311	(A,166,70) CHIP TRANSISTOR	HN1A01FU
	Q 403	(A,118,117) TRANSISTOR	2SA1576A
	Q 404	(A,104,71) TRANSISTOR	UMD2N
	Q 405	(A,118,120) TRANSISTOR	2SC4081
	Q 406	(A,42,78) TRANSISTOR	2SD2114K
	Q 407	(A,42,92) TRANSISTOR	2SD2114K
	Q 408	(A,42,73) TRANSISTOR	2SD2114K
	Q 409	(A,42,87) TRANSISTOR	2SD2114K
	Q 410	(A,117,112) TRANSISTOR	2SC4081
	Q 602	(B,59,164) TRANSISTOR	2SA1576A
	Q 603	(B,63,174) TRANSISTOR	2SC4081
	D 101	(A,215,181) DIODE	1SS355
	D 102	(A,215,174) DIODE	1SS355
	D 103	(A,154,63) DIODE	1SS355
	D 104	(B,174,176) DIODE	1SR154-400
	D 110	(B,194,177) DIODE	1SS352
	D 201	(B,200,83) DIODE	1SS355
	D 301	(B,139,39) DIODE	UDZS15(B)
	D 302	(A,163,76) DIODE	UDZS9R1(B)
	D 303	(B,153,66) DIODE	1SS355
	D 304	(A,168,76) DIODE	1SS355
	D 401	(A,120,130) DIODE	UDZS11(B)
	D 402	(A,71,109) DIODE	UDZS6R8(B)
	D 418	(B,114,71) DIODE	1SS355
	D 419	(A,106,73) DIODE	1SS355
	D 701	(B,27,33) DIODE	1SS355
	L 201	(A,195,79) RADIAL INDUCTOR	ATH1109
	L 304	(A,147,67) RADIAL INDUCTOR	LFCA331J
	L 305	(B,158,66) INDUCTOR	CTF1399
	L 602	(A,62,170) INDUCTOR	CTF1399
	L 604	(B,44,173) INDUCTOR	CTF1306
	L 605	(B,47,172) INDUCTOR	CTF1306
	JA 402	(A,17,78) 9P PIN JACK	VKB1239
	JA 403	(A,17,132) JACK	VKB1253
	JA 701	(A,18,25) JACK	RKN1004
	KN 101	(A,100,35) WRAPPING TERMINAL	VNF1084
	KN 102	(A,161,20) WRAPPING TERMINAL	VNF1084
	KN 103	(A,229,92) WRAPPING TERMINAL	VNF1084
	X 101	(A,205,156) CRYSTAL OSCILLATOR(15MHz)	CSS1653
	X 102	(A,212,156) CRYSTAL RESONATOR (32 KHz)	VSS1197
	CN 101	(A,56,26) 22P CONNECTOR	VKN1253
	CN 102	(A,83,26) 22P CONNECTOR	VKN1253
	CN 103	(A,233,161) 9P CONNECTOR	VKN2015
	CN 105	(A,232,150) CONNECTOR	9604S-19C
	CN 106	(A,235,107) CONNECTOR	HLEM11S-1
	CN 302	(A,120,27) CONNECTOR	HLEM24R-1
	BT 101	(A,185,179) LITHIUM BATTERY	VEM1037
	U 601	(A,26,178) TV TUNER PACK	VXF1103
	401	2P 4PIN MINIDIN(S)	AKP1235

RESISTORS

Mark	No.	Description	Part No.
	R 101	(A,183,133)	RS1/16S101J
	R 102	(A,183,131)	RS1/16S101J
	R 103	(A,185,126)	RS1/16S101J
	R 104	(A,224,180)	RS1/16S473J
	R 105	(A,220,159)	RS1/16S101J
	R 106	(A,221,166)	RS1/16S0R0J
	R 107	(A,223,181)	RS1/16S103J
	R 109	(B,205,146)	RS1/16S331J
	R 110	(B,198,145)	RS1/16S101J
	R 111	(A,219,170)	RS1/16S101J
	R 112	(A,220,175)	RS1/16S103J
	R 113	(A,217,176)	RS1/16S0R0J
	R 116	(B,212,159)	RS1/16S0R0J
	R 117	(B,201,153)	RS1/16S105J
	R 118	(B,198,154)	RS1/16S0R0J
	R 123	(A,193,166)	RS1/16S101J
	R 124	(A,191,165)	RS1/16S101J
	R 126	(A,191,155)	RS1/16S101J
	R 129	(A,190,164)	RS1/16S101J
	R 130	(A,234,157)	RS1/16S0R0J
	R 131	(A,188,154)	RS1/16S104J
	R 134	(A,185,153)	RS1/16S102J
	R 135	(B,187,144)	RS1/16S102J
	R 136	(A,185,155)	RS1/16S102J
	R 139	(A,178,164)	RS1/16S682J
	R 140	(A,178,160)	RS1/16S470J
	R 141	(A,181,164)	RS1/16S682J
	R 142	(A,181,160)	RS1/16S470J
	R 143	(A,183,150)	RS1/16S101J
	R 144	(A,181,143)	RS1/16S0R0J
	R 145	(A,183,136)	RS1/16S104J
	R 150	(A,190,124)	RS1/16S0R0J
	R 151	(B,184,132)	RS1/16S0R0J
	R 152	(A,191,114)	RS1/16S101J
	R 153	(A,192,119)	RS1/16S101J
	R 154	(B,203,128)	RS1/16S101J
	R 155	(A,194,115)	RS1/16S101J
	R 156	(A,196,123)	RS1/16S101J
	R 157	(A,198,124)	RS1/16S104J
	R 158	(A,199,123)	RS1/16S104J
	R 159	(A,201,122)	RS1/16S0R0J
	R 160	(A,200,127)	RS1/16S101J
	R 161	(A,197,117)	RS1/16S0R0J
	R 165	(A,204,118)	RS1/16S104J
	R 168	(A,207,119)	RS1/16S181J
	R 170	(A,202,127)	RS1/16S104J
	R 171	(A,209,121)	RS1/16S101J
	R 172	(A,209,122)	RS1/16S101J
	R 173	(A,209,124)	RS1/16S104J
	R 174	(A,211,124)	RS1/16S104J
	R 175	(A,209,119)	RS1/16S331J
	R 176	(B,221,133)	RS1/16S102J
	R 180	(A,219,140)	RS1/16S101J
	R 181	(A,215,140)	RS1/16S101J
	R 182	(A,218,141)	RS1/16S101J
	R 183	(A,215,142)	RS1/16S101J
	R 184	(A,218,143)	RS1/16S101J
	R 185	(A,215,144)	RS1/16S101J
	R 186	(A,218,145)	RS1/16S101J
	R 187	(A,215,146)	RS1/16S101J

Mark	No.	Description	Part No.
R	188 (B,207,145)		RS1/16S331J
R	189 (B,213,143)		RS1/16S471J
R	191 (A,184,144)		RS1/16S0R0J
R	192 (A,184,149)		RS1/16S0R0J
R	193 (B,223,166)		RS1/16S104J
R	194 (B,223,168)		RS1/16S104J
R	195 (B,223,164)		RS1/16S104J
R	196 (B,223,172)		RS1/16S101J
R	199 (A,206,115)		RS1/16S101J
R	200 (B,211,143)		RS1/16S101J
R	201 (A,184,142)		RS1/16S101J
R	204 (A,181,141)		RS1/16S101J
R	205 (B,178,138)		RS1/16S101J
R	211 (B,190,179)		RS1/16S102J
R	212 (A,189,101)		RS1/16S0R0J
R	213 (A,189,157)		RS1/16S103J
R	218 (B,208,86)		RS1/10S0R0J
R	219 (A,194,90)		RS1/16S332J
R	220 (A,198,91)		RS1/16S222J
R	221 (A,179,151)		RS1/16S101J
R	222 (A,181,145)		RS1/16S0R0J
R	223 (A,179,160)		RS1/16S0R0J
R	224 (A,176,160)		RS1/16S0R0J
R	225 (A,196,168)		RS1/16S393J
R	226 (A,197,166)		RS1/16S682J
R	228 (A,194,163)		RS1/16S0R0J
R	233 (A,60,28)		RS1/16S0R0J
R	234 (B,62,89)		RS1/16S0R0J
R	235 (B,62,76)		RS1/16S0R0J
R	236 (B,48,93)		RS1/16S0R0J
R	237 (A,183,134)		RS1/16S0R0J
R	251 (B,196,74)		RS1/10S0R0J
R	302 (B,149,57)		RS1/10S0R0J
R	303 (B,152,57)		RS1/10S0R0J
R	305 (B,168,181)		RS1/16S330J
R	306 (B,185,65)		RS1/16S330J
R	307 (A,168,82)		RS1/10S0R0J
R	308 (A,168,80)		RS1/10S0R0J
R	309 (B,177,67)		RS1/16S152J
R	310 (B,149,69)		RS1/16S472J
R	311 (B,149,73)		RS1/16S821J
R	312 (A,160,68)		RS1/16S103J
R	313 (B,165,69)		RS1/16S184J
R	314 (B,166,76)		RS1/16S223J
R	315 (B,162,70)		RS1/16S1003F
R	316 (B,159,71)		RS1/16S2202F
R	318 (B,169,178)		RS1/16S0R0J
R	400 (B,26,62)		RS1/16S0R0J
R	401 (A,117,122)		RS1/10S0R0J
R	402 (B,65,21)		RS1/16S0R0J
R	403 (B,58,21)		RS1/16S0R0J
R	404 (A,120,127)		RS1/10S0R0J
R	405 (A,69,80)		RS1/16S0R0J
R	406 (A,69,85)		RS1/16S0R0J
R	407 (B,106,97)		RS1/10S0R0J
R	408 (A,103,153)		RS1/16S471J
R	409 (A,104,149)		RS1/16S681J
R	410 (B,103,118)		RS1/16S103J
R	411 (A,100,149)		RS1/16S681J
R	413 (A,101,153)		RS1/16S471J
R	414 (A,96,144)		RS1/16S471J
R	415 (A,94,144)		RS1/16S471J
R	416 (A,92,144)		RS1/16S471J
R	417 (A,90,147)		RS1/16S471J
R	418 (A,88,147)		RS1/16S471J
R	419 (A,86,144)		RS1/16S471J
R	421 (A,89,136)		RS1/16S105J
R	422 (A,107,143)		RS1/16S103J
R	423 (A,84,142)		RS1/10S75R0F
R	424 (A,81,134)		RS1/16S105J
R	425 (B,89,120)		RS1/16S104J
R	426 (A,68,138)		RS1/10S75R0F
R	428 (B,86,125)		RS1/16S0R0J
R	430 (A,80,129)		RS1/16S105J
R	431 (A,79,123)		RS1/16S105J
R	432 (A,82,123)		RS1/16S105J
R	433 (B,48,60)		RS1/10S75R0F
R	434 (B,41,60)		RS1/10S0R0J
R	436 (A,96,106)		RS1/16S101J
R	437 (A,95,106)		RS1/16S101J
R	438 (A,73,111)		RS1/10S0R0J
R	441 (A,65,127)		RS1/10S75R0F
R	442 (A,66,120)		RS1/10S75R0F
R	443 (A,68,135)		RS1/10S75R0F
R	444 (A,76,128)		RS1/10S75R0F
R	445 (A,72,131)		RS1/10S75R0F
R	446 (A,69,132)		RS1/10S75R0F
R	447 (A,70,124)		RS1/10S75R0F
R	448 (A,73,114)		RS1/10S0R0J
R	450 (B,39,143)		RS1/16S101J
R	451 (B,41,143)		RS1/16S104J
R	452 (B,44,157)		RS1/16S104J
R	453 (A,119,145)		RS1/16S8201F
R	454 (A,110,135)		RS1/16S1002F
R	455 (A,114,118)		RS1/16S470J
R	457 (A,111,109)		RS1/16S0R0J
R	458 (A,121,117)		RS1/16S471J
R	459 (A,117,115)		RS1/16S471J
R	460 (A,114,120)		RS1/16S470J
R	461 (A,115,109)		RS1/16S681J
R	462 (A,110,133)		RS1/16S1002F
R	463 (A,119,134)		RS1/16S8201F
R	464 (B,39,39)		RS1/10S75R0F
R	465 (A,113,113)		RS1/16S471J
R	466 (B,37,39)		RS1/10S0R0J
R	467 (B,42,56)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	468 (B,39,45)		RS1/10S75R0F
R	469 (B,37,45)		RS1/10S0R0J
R	470 (B,42,50)	CHIP TYPE RESISTOR	RS1/10S68R0F
R	471 (B,39,50)		RS1/10S3R9J
R	472 (B,57,67)		RS1/10S75R0F
R	473 (B,54,69)		RS1/10S3R9J
R	474 (B,58,83)		RS1/10S75R0F
R	475 (B,55,84)		RS1/10S0R0J
R	476 (B,57,96)		RS1/10S75R0F
R	477 (B,55,96)		RS1/10S0R0J
R	478 (B,48,63)		RS1/10S75R0F
R	479 (B,41,77)		RS1/16S471J
R	480 (B,41,63)		RS1/10S0R0J
R	481 (B,39,56)		RS1/10S3R9J

Mark	No.	Description	Part No.
R	482	(B,36,77)	RS1/16S101J
R	483	(B,41,74)	RS1/16S471J
R	484	(A,43,82)	RS1/16S102J
R	485	(B,47,74)	RS1/16S223J
R	486	(A,42,96)	RS1/16S102J
R	487	(A,41,69)	RS1/16S102J
R	488	(B,41,91)	RS1/16S471J
R	489	(B,47,87)	RS1/16S223J
R	490	(B,36,91)	RS1/16S101J
R	491	(A,41,83)	RS1/16S102J
R	492	(B,43,88)	RS1/16S471J
R	493	(B,36,74)	RS1/16S101J
R	494	(B,36,88)	RS1/16S101J
R	495	(B,39,157)	RS1/16S101J
R	496	(B,44,150)	RS1/16S104J
R	497	(B,39,150)	RS1/16S101J
R	498	(B,39,162)	RS1/16S101J
R	499	(B,44,162)	RS1/16S104J
R	601	(B,66,173)	RS1/16S0R0J
R	604	(B,56,174)	RS1/16S0R0J
R	605	(B,62,169)	RS1/16S103J
R	606	(B,62,164)	RS1/16S103J
R	607	(B,56,168)	RS1/16S102J
R	609	(B,26,174)	RS1/16S0R0J
R	610	(B,53,173)	RS1/16S0R0J
R	611	(B,58,174)	RS1/16S0R0J
R	613	(B,129,176)	RS1/16S0R0J
R	614	(B,133,175)	RS1/16S0R0J
R	635	(B,66,175)	RS1/16S0R0J
R	636	(B,39,183)	RS1/16S0R0J
R	637	(B,77,186)	RS1/16S0R0J
R	701	(B,34,35)	RS1/16S224J
R	702	(B,25,31)	RS1/16S221J
R	704	(B,29,32)	RS1/16S221J
R	801	(B,67,39)	RS1/16S101J
R	802	(B,70,40)	RS1/16S104J
R	803	(B,74,41)	RS1/16S104J
R	820	(B,67,72)	RS1/10S0R0J
R	821	(A,61,45)	RS1/16S0R0J
R	822	(A,58,45)	RS1/16S0R0J
R	823	(B,73,38)	RS1/16S101J
R	824	(B,78,40)	RS1/16S101J

CAPACITORS

Mark	No.	Description	Part No.
C	104	(A,216,150)	CEAT220M25
C	105	(A,221,183)	CKSRYF104Z25
C	106	(A,224,183)	CKSRYF104Z25
C	107	(B,203,146)	CCSRCH331J50
C	109	(A,216,171)	CKSRYF104Z25
C	110	(A,217,181)	CKSRYB105K10
C	111	(B,215,159)	CCSRCH100D50
C	112	(B,212,161)	CCSRCH120J50
C	113	(A,197,152)	CKSRYF105Z10
C	114	(B,205,160)	CCSRCH150J50
C	115	(B,201,160)	CCSRCH150J50
C	120	(B,171,179)	CKSRYF104Z25
C	121	(A,235,156)	CKSRYF105Z10
C	122	(B,180,176)	CKSRYF105Z10
C	123	(A,180,172)	CEAT221M6R3
C	126	(A,183,139)	CKSRYF104Z25
C	131	(A,192,128)	CKSRYF104Z25
C	132	(B,181,133)	CKSRYF104Z25
C	133	(A,189,117)	CKSRYF104Z25
C	134	(A,200,115)	CKSRYF104Z25
C	136	(A,209,127)	CKSRYF105Z10
C	138	(A,221,130)	CEAT2R2M50
C	139	(A,213,133)	CKSRYF104Z25
C	140	(A,212,137)	CKSRYF104Z25
C	141	(A,174,160)	CKSRYF105Z10
C	142	(A,174,161)	CCSRCH102J50
C	147	(A,232,157)	CKSRYF104Z25
C	152	(A,193,101)	CKSRYF105Z10
C	153	(B,226,150)	CKSRYF105Z16
C	154	(B,228,143)	CKSRYF104Z25
C	155	(A,237,156)	CCSRCH102J50
C	158	(A,227,170)	DCH1201
C	159	(B,239,155)	DCH1201
C	166	(A,199,151)	CCSRCH102J50
C	167	(A,184,139)	CCSRCH102J50
C	168	(A,208,128)	CCSRCH102J50
C	169	(A,221,138)	CCSRCH102J50
C	202	(A,211,83)	CKSRYF104Z25
C	204	(A,210,86)	CEAT101M16
C	205	(A,210,80)	CEAT220M25
C	206	(A,193,90)	CCSRCH471J50
C	208	(B,196,69)	CKSRYB104K16
C	211	(A,188,155)	CKSRYF104Z25
C	301	(B,138,34)	CKSRYF104Z25
C	302	(B,145,33)	CKSRYF104Z25
C	303	(A,139,59)	CEAT101M16
C	304	(A,147,54)	CEAT471M10
C	309	(B,166,179)	CKSRYF104Z25
C	310	(A,164,186)	CKSRYF104Z25
C	311	(A,167,185)	CEAT221M16
C	312	(A,161,185)	CEAT101M16
C	313	(B,182,64)	CKSRYF105Z10
C	314	(B,182,73)	CKSRYF104Z25
C	315	(A,182,70)	CEAT101M16
C	316	(A,181,79)	CEAT101M16
C	317	(B,173,66)	CKSRYF104Z25
C	318	(B,171,77)	CKSRYF104Z25
C	319	(A,172,74)	CEAT101M16
C	320	(A,181,86)	CEAT101M16
C	321	(B,141,64)	CKSRYF104Z25
C	322	(B,147,70)	CCSRCH101J50
C	323	(B,154,70) CERAMIC CAPACITOR	CKSQYF105Z50
C	324	(B,167,74)	CKSRYF104Z25
C	326	(A,163,65)	CEAT100M50
C	328	(B,158,63)	CKSRYF104Z50
C	329	(B,159,184)	CKSRYF104Z25
C	331	(A,165,83)	DCH1201
C	333	(A,163,79)	DCH1201
C	335	(B,145,35)	CCSRCH102J50
C	336	(B,138,37)	CCSRCH102J50
C	401	(A,106,127)	CKSRYF105Z10
C	402	(A,108,131)	CKSRYF104Z25
C	403	(A,106,130)	CKSRYF104Z25
C	404	(A,106,122)	CKSRYF105Z10
C	406	(A,107,116)	CKSRYB104K16
C	407	(A,110,115)	CKSRYF104Z25

Mark	No.	Description	Part No.
C	408	(A,107,114)	CKSRYF104Z25
C	409	(A,110,113)	CKSRYF104Z25
C	410	(A,107,112)	CKSRYF104Z25
C	411	(A,103,141)	CKSRYB105K10
C	412	(A,101,141)	CKSRYB105K10
C	413	(B,103,122)	CKSRYB104K16
C	414	(A,109,143)	CKSRYF104Z25
C	415	(A,109,148)	CKSRYF104Z25
C	418	(A,99,140)	CKSRYF105Z10
C	419	(A,96,141)	CKSRYB105K10
C	420	(A,94,141)	CKSRYB105K10
C	421	(A,92,141)	CKSRYB105K10
C	422	(A,90,144)	CKSRYB105K10
C	423	(A,88,144)	CKSRYB105K10
C	424	(A,86,141)	CKSRYB105K10
C	425	(A,84,140)	CKSRYB105K10
C	426	(A,73,138)	CKSRYB104K16
C	427	(A,65,138)	CKSRYB103K50
C	428	(B,86,123)	CKSRYB104K16
C	429	(A,73,135)	CKSRYB105K10
C	430	(A,73,133)	CKSRYB104K16
C	431	(A,82,127)	CKSRYB104K16
C	432	(A,73,126)	CKSRYB105K10
C	434	(A,83,118)	CKSRYB104K16
C	435	(A,105,106)	CKSRYF104Z25
C	436	(A,104,106)	CKSRYF104Z25
C	437	(A,102,106)	CKSRYF104Z25
C	438	(A,99,107)	CKSRYF105Z10
C	439	(A,90,108)	CKSRYB104K16
C	440	(B,88,115)	CKSRYB104K16
C	441	(A,84,116)	CKSRYF105Z10
C	442	(A,84,113)	CKSRYF104Z25
C	443	(A,77,131)	CKSRYB105K10
C	444	(A,75,124)	CKSRYB105K10
C	445	(A,72,117)	CKSRYB105K10
C	446	(A,73,122)	CKSRYB105K10
C	447	(A,72,128)	CKSRYB103K50
C	448	(A,66,131)	CKSRYB103K50
C	452	(A,115,127)	CEAT101M10
C	453	(A,110,121)	CEAT101M10
C	454	(A,102,96)	CEAT101M10
C	455	(A,99,145)	CEAT4R7M50
C	456	(A,77,134)	CEAT1R0M50
C	457	(A,78,120)	CEAT100M50
C	458	(A,78,111)	CEAT101M10
C	459	(A,123,118)	CKSRYF105Z10
C	460	(A,123,120)	CKSRYF105Z10
C	461	(B,44,143)	CCSRCH471J50
C	462	(B,41,157)	CCSRCH471J50
C	463	(B,41,150)	CCSRCH471J50
C	464	(A,127,135)	CKSRYF104Z25
C	465	(B,41,162)	CCSRCH471J50
C	467	(A,120,111)	CKSRYF105Z10
C	468	(A,106,148)	CKSRYF104Z25
C	469	(A,105,142)	CKSRYF104Z25
C	470	(B,34,143)	CCSRCH102J50
C	471	(A,118,142)	CEAT100M50
C	472	(A,123,147)	CEAT100M50
C	473	(A,130,129)	CEAT101M16
C	474	(A,118,137)	CEAT100M50

Mark	No.	Description	Part No.
C	475	(A,124,134)	CEAT100M50
C	476	(A,53,51)	CKSRYB103K50
C	477	(B,34,157)	CCSRCH102J50
C	478	(A,60,61) ELECT. CAPACITOR	CEAT102M6R3
C	482	(B,33,77)	CCSRCH471J50
C	483	(A,45,55) ELECT. CAPACITOR	CEAT102M6R3
C	484	(B,32,92)	CCSRCH471J50
C	487	(A,50,69) ELECT. CAPACITOR	CEAT102M6R3
C	488	(A,51,83) ELECT. CAPACITOR	CEAT471M6R3
C	489	(A,51,96) ELECT. CAPACITOR	CEAT471M6R3
C	491	(A,51,76)	CEAT470M16
C	492	(A,111,71)	CEAT221M6R3
C	493	(B,33,73)	CCSRCH471J50
C	495	(A,51,90)	CEAT470M16
C	496	(A,83,120)	CKSRYF104Z25
C	497	(B,33,87)	CCSRCH471J50
C	498	(B,34,150)	CCSRCH102J50
C	499	(B,33,162)	CCSRCH102J50
C	603	(B,53,169)	CKSRYB222K50
C	604	(B,61,174)	CCSRCH101J50
C	605	(B,44,175)	CCSRCH100D50
C	606	(B,48,175)	CCSRCH100D50
C	607	(A,78,168)	CEAT1R0M50
C	609	(A,55,170)	CEAT101M10
C	701	(B,42,36)	CKSRYF105Z10
C	702	(B,29,29)	CCSRCH681J50
C	703	(B,22,32)	CKSRYF104Z25
C	801	(A,67,67) ELECT. CAPACITOR	CEAT471M6R3
C	802	(B,62,41)	CKSRYF104Z25
C	803	(A,60,39)	CKSRYB104K16
C	804	(A,56,42)	CKSRYB104K16
C	805	(A,57,38)	CKSRYB104K16
C	806	(A,53,39)	CKSRYB104K16
C	807	(A,50,39)	CKSRYB104K16
C	808	(A,48,39)	CKSRYB104K16
C	809	(A,45,40)	CEAT101M10
C	810	(B,45,43)	CKSRYF104Z25
C	811	(B,61,56)	CKSRYF104Z25
C	812	(A,58,54)	CKSRYF104Z25
C	813	(B,53,56)	CKSRYF104Z25

B SERVICE FLKY ASSY

MISCELLANEOUS

Mark	No.	Description	Part No.
IC	101	(B,143,78) FL DRIVER IC	PT6315
Q	101	(B,31,57) DIGITAL TRANSISTOR	DTC124EUA
Q	103	(B,117,59) DIGITAL TRANSISTOR	DTC124EUA
Q	104	(B,204,73) TRANSISTOR	2SC5712
Q	105	(B,200,68) TRANSISTOR	2SA1576A
Q	106	(B,210,61) TRANSISTOR	2SC4081
Q	108	(B,205,45) DIGITAL TRANSISTOR	DTC124EUA
Q	201	(B,99,15) DIGITAL TRANSISTOR	DTC124EUA
Q	202	(B,108,16) DIGITAL TRANSISTOR	DTC124EUA
Q	203	(B,139,35) DIGITAL TRANSISTOR	DTC124EUA
Q	204	(B,91,16) DIGITAL TRANSISTOR	DTC124EUA
Q	205	(B,117,16) DIGITAL TRANSISTOR	DTC124EUA
Q	206	(B,83,18) DIGITAL TRANSISTOR	DTC124EUA
D	101	(A,22,61) LED(BLUE)	SLR343BC4T(JKLM)
D	103	(A,39,61) LED(ORANGE)	SLR-343DC(NPQ)
D	107	(B,221,41) DIODE	RF101L2S

Mark	No.	Description	Part No.
D	108	(B,201,81) DIODE	UDZS15(B)
D	109	(B,200,73) DIODE	1SS355
D	110	(B,212,71) DIODE	RF101L2S
D	111	(B,209,79) DIODE	UDZS2R4(B)
D	112	(B,198,83) DIODE	UDZS13(B)
D	113	(A,120,62) LED(RED)	SLR-343VC(NPQ)
D	171	(A,211,45) LED(RED)	SLR-343VC(NPQ)
D	205	(A,88,22) LED(RED)	SLR-343VC(NPQ)
D	212	(A,75,22) LED(RED)	SLR-343VC(NPQ)
D	271	(A,144,40) LED(BLUE)	SLR343BC4T(JKLM)
L	101	(A,197,68) AXIAL INDUCTOR	LAU220J
V	101	(A,95,89) FLUORESCENT TUBE	VAW1091
S	103	(A,91,45) SWITCH	VSG1024
S	104	(A,91,39) SWITCH	VSG1024
S	105	(A,65,39) SWITCH	VSG1024
S	106	(A,116,39) SWITCH	VSG1024
S	107	(A,49,39) SWITCH	VSG1024
S	108	(A,116,45) SWITCH	VSG1024
S	109	(A,49,45) SWITCH	VSG1024
S	110	(A,210,38) SWITCH	VSG1024
S	111	(A,65,45) SWITCH	VSG1024
S	112	(A,80,72) SWITCH	VSG1024
S	201	(A,147,46) SWITCH	VSG1024
S	202	(A,77,10) SWITCH	VSG1024
T	101	(A,220,51) TRANSFORMER	VTT1171
CN	111	(A,165,61) CONNECTOR	9604S-19C
	112	HOUSING ASS'Y(10P)	VKP2401
	103	REMOTE RECEIVER UNIT	GP1UM28XK0VF
		FL HOLDER (FE)	VNF1134

RESISTORS

Mark	No.	Description	Part No.
R	101	(B,35,57)	RS1/16S182J
R	104	(B,194,59)	RS1/16S0R0J
R	109	(B,48,55)	RS1/16S151J
R	110	(B,126,74)	RS1/16S470J
R	111	(B,128,74)	RS1/16S470J
R	112	(B,124,74)	RS1/16S470J
R	113	(B,133,72)	RS1/16S823J
R	114	(B,46,56)	RS1/16S0R0J
R	115	(B,85,72)	RS1/16S103J
R	117	(B,197,74)	RS1/16S274J
R	118	(B,191,75)	RS1/16S102J
R	119	(B,208,73)	RS1/16S273J
R	120	(B,202,65)	RS1/16S103J
R	121	(B,215,58)	RS1/10S221J
R	122	(B,215,56)	RS1/16S122J
R	123	(B,210,83)	RS1/16S103J
R	124	(B,204,61)	RS1/16S102J
R	125	(B,79,43)	RS1/16S103J
R	126	(B,81,43)	RS1/16S103J
R	127	(B,74,41)	RS1/16S222J
R	128	(B,109,42)	RS1/16S222J
R	129	(B,72,41)	RS1/16S222J
R	130	(B,111,40)	RS1/16S222J
R	131	(B,69,43)	RS1/16S332J
R	132	(B,113,40)	RS1/16S332J
R	133	(B,117,64)	RS1/16S271J
R	135	(B,201,52)	RS1/16S562J
R	137	(B,219,83)	RS1/16S0R0J
R	138	(B,191,83)	RS1/16S0R0J

Mark	No.	Description	Part No.
R	144	(B,149,68)	RS1/16S0R0J
R	146	(B,193,75)	RS1/16S0R0J
R	148	(B,76,41)	RS1/16S470J
R	149	(B,87,44)	RS1/16S470J
R	150	(B,83,72)	RS1/16S470J
R	152	(B,59,49)	RS1/16S0R0J
R	170	(B,222,60)	RS1/16S271J
R	204	(B,81,9)	RS1/16S222J
R	205	(B,148,32)	RS1/16S222J
R	206	(B,92,27)	RS1/16S272J
R	209	(B,81,24)	RS1/16S272J
R	221	(B,79,24)	RS1/16S272J
R	222	(B,90,27)	RS1/16S272J
R	224	(B,109,26)	RS1/16S272J
R	225	(B,107,26)	RS1/16S272J
R	226	(B,98,26)	RS1/16S272J
R	227	(B,102,27)	RS1/16S272J
R	228	(B,123,19)	RS1/16S272J
R	229	(B,123,17)	RS1/16S272J
R	230	(B,83,24)	RS1/16S272J
R	231	(B,94,27)	RS1/16S272J
R	232	(B,100,26)	RS1/16S272J
R	233	(B,111,26)	RS1/16S272J
R	234	(B,123,15)	RS1/16S272J
R	270	(B,141,31)	RS1/16S102J

CAPACITORS

Mark	No.	Description	Part No.
C	102	(B,39,54)	CKSRYF104Z25
C	103	(B,95,83)	CKSRYB103K50
C	104	(B,215,86)	CKSRYB103K50
C	106	(B,147,68)	CKSRYF104Z25
C	107	(B,155,82)	CKSRYF104Z50
C	112	(B,132,80)	CKSRYF104Z25
C	113	(A,206,52)	CEAL101M10
C	115	(B,199,65)	CKSRYF104Z25
C	116	(A,199,61)	CEJQ101M16
C	117	(B,206,64)	CKSRYB223K50
C	118	(A,216,61) ELECTR. CAPACITOR	CEAL100M50
C	119	(B,97,35)	CKSRYF105Z10
C	120	(B,182,70)	CKSRYF104Z25
C	121	(B,210,56)	CKSRYB103K50
C	123	(B,106,44)	CKSRYF104Z25
C	124	(B,104,45)	CKSRYF104Z25
C	127	(B,220,78)	CKSRYF104Z25
C	128	(A,221,65)	CEAL101M10
C	130	(B,83,68)	CKSRYF104Z25
C	132	(B,114,66)	CKSRYF104Z25
C	170	(B,222,62)	CKSRYF104Z25
C	201	(B,148,29)	CKSRYF104Z25
C	202	(B,69,28)	CKSRYF105Z16
C	204	(B,88,28)	CKSRYF104Z25
C	205	(B,96,28)	CKSRYF104Z25
C	206	(B,105,28)	CKSRYF104Z25
C	207	(B,113,28)	CKSRYF104Z25
C	270	(B,139,31)	CKSRYF105Z16
C	271	CERAMIC CAPACITOR	CKSQYF105Z50

C SERVICE FRJB ASSY

MISCELLANEOUS

Mark	No.	Description	Part No.
JA	301	(A,211,31) 4P MINIDIN SOCKET(S)	AKP1239

Mark	No.	Description	Part No.
JA	302	(A,181,32) JACK	VKB1220
KN	301	(A,231,17) WRAPPING TERMINAL	VNF1084
KN	302	(A,154,17) WRAPPING TERMINAL	VNF1084
CN	301	(A,198,7) CONNECTOR	HLEM11S-1

RESISTORS

Mark	No.	Description	Part No.
R	303	(B,181,16)	RS1/16S0R0J
R	305	(B,178,15)	RS1/16S0R0J
R	306	(B,165,15)	RS1/16S0R0J

CAPACITORS

Mark	No.	Description	Part No.
C	303	(B,181,20)	CCSRCH471J50
C	305	(B,162,18)	CCSRCH471J50

D SERVICE MAIN ASSY

MISCELLANEOUS

Mark	No.	Description	Part No.
IC	200	FLASH ROM IC	SST25V016BCS
IC	201	SDRAM(64M)	K4S641632K-UC60
IC	501	7CH DRIVER IC	BD7956FS
IC	1001	DVDR IC	MC-10050F1-507LU1A
IC	1102	FLASH ROM	VYW2407
IC	1201	IC	K4H511638D-UCB3
IC	1221	IC	K4H511638D-UCB3
IC	1301	IC	NJM12904V
IC	1302	IC	NJM12904V
IC	3101	AD CONVERTER IC	AK5359ET
IC	3131	IC	TC7SZ08FU
IC	3201	D/A CONVERTER IC	WM8740SEDS
IC	3202	OP-AMP IC	UPC4570G2
IC	3203	OP-AMP IC	UPC4570G2
IC	3204	OP-AMP IC	UPC4570G2
IC	3205	IC	TC7SZ08FU
IC	3206	OP-AMP IC	UPC4570G2
IC	3261	IC	NJM4580V
IC	3271	IC	NJM78L08UA
IC	3701	IC	TC7WH34FU
IC	3702	IC	TC7SH08FUS1
IC	3707	RESET IC	PST3813U
IC	4501	FUSE	CEK1285
IC	4502	FUSE	CEK1285
IC	4503	FUSE	CEK1284
IC	4504	FUSE	CEK1284
IC	4505	FUSE	CEK1284
IC	4506	FUSE	CEK1284
IC	4511	REGULATOR IC	S-1170B33UC-OTS
IC	4521	REGULATOR IC	S-1170B25UC-OTK
IC	4531	REGULATOR IC	MM1701WH
IC	4541	REGULATOR IC	S-1170B33UC-OTS
IC	4552	REGULATOR IC	S-1170B50UC-OUJ
IC	4561	REGULATOR IC	S-1112B50MC-L7J
IC	4562	REGULATOR IC	S-1112B33MC-L6S
IC	4571	REGULATOR IC	S-1132B18-U5
IC	4601	REGULATOR IC	MM1701CH
IC	4607	FUSE	CEK1281
IC	4608	FUSE	CEK1281
IC	4609	FUSE	CEK1281
IC	4611	REGULATOR IC (1.5V)	MM1561FF
IC	4621	DUAL REGULATOR	MM1689FH
IC	4631	IC	S-1132B25-U5
IC	4641	REGULATOR IC	S-1170B33UC-OTS
IC	4651	REGULATOR IC	S-1132B33-U5

Mark	No.	Description	Part No.
IC	4661	REGULATOR IC	S-1170B33UC-OTS
IC	4671	REGULATOR IC	S-1112B50MC-L7J
IC	4681	REGULATOR IC	S-1112B50MC-L7J
IC	4701	LOGIC IC	TC74VCX245FK
IC	4702	IC	TC7SZ08FU
IC	4703	LOGIC IC	TC74VHC125FK
IC	5103	DV-PHY IC	UPD72852AGB-8EU
IC	5202	IC	R5523N001B
IC	5203	IC	TC7SH08FUS1
IC	5204	REGULATOR IC	R1173H001B
IC	5602	SATA BRIDGE IC	88SA8040B1-TBC1
IC	5701	IC	TC74VHC00FTS1
IC	5801	IC	TC7MB3257FK
IC	5802	HDMI TRANSMITER IC	SII9134CTU
IC	5803	IC	TC7PA53FU
IC	5804	ZERO DELAY BUFFER	ICS571MLF
IC	6101	PROGRESSIVE IC	CM0039AF
IC	6102	SDRAM	M12L64322A-6TG
IC	6302	VIDEO FORMAT CONV	88DE2710
IC	6303	IC	K4H561638H-UCB3
IC	6305	IC	AK4121AVF
IC	6306	IC	NJM12904V
Q	102	TRANSISTOR	RT1N141U
Q	1801	TRANSISTOR	2SA1576A
Q	1811	TRANSISTOR	2SA1576A
Q	3201	TRANSISTOR	2SC4081
Q	3301	TRANSISTOR	2SA1576A
Q	3302	TRANSISTOR	2SC4081
Q	4581	TRANSISTOR	2SC4081
Q	5701	TRANSISTOR	2SC4081
Q	5801	CHIP TRANSISTOR	HN1C01FU
Q	5802	CHIP TR (PNP X 2)	UMB1N
Q	5803	DIGITAL TRANSISTOR	DTC124EUA
Q	5804	TRANSISTOR	2SA1576A
Q	5805	MOS FET	2SK2034
Q	5806	CHIP TRANSISTOR	UMF21N
Q	5807	CHIP TRANSISTOR	HN1B04FU
Q	5808	CHIP TRANSISTOR	HN1B04FU
Q	5809	CHIP TRANSISTOR	HN1B04FU
Q	5810	CHIP TRANSISTOR	HN1B04FU
Q	5811	CHIP TRANSISTOR	HN1B04FU
Q	5812	CHIP TRANSISTOR	HN1B04FU
D	3201	DIODE	DAN202U
D	3261	DIODE	UDZS6R2(B)
D	3271	CHIP DIODE	RB501V-40
D	3711	CHIP DIODE	RB501V-40
D	3712	CHIP DIODE	RB501V-40
D	4552	CHIP DIODE	RB501V-40
D	4571	CHIP DIODE	RB501V-40
D	4621	CHIP DIODE	RB501V-40
D	4631	CHIP DIODE	RB501V-40
D	4641	CHIP DIODE	RB501V-40
D	4651	CHIP DIODE	RB501V-40
L	105	CHIP COIL	BTH1103
L	1001	EMI FILTER	DTL1106
L	1002	EMI FILTER	DTL1106
L	1003	EMI FILTER	DTL1106
L	1004	EMI FILTER	DTL1106
L	1005	INDUCTOR	LCTC150K2125
L	1021	EMI FILTER	DTL1106

Mark	No.	Description	Part No.
L	1022	EMI FILTER	DTL1106
L	1023	EMI FILTER	DTL1106
L	1024	EMI FILTER	DTL1106
L	1025	EMI FILTER	DTL1106
L	1801	CHIP COIL	LCYA390J2520
L	1811	INDUCTOR	LCYA150J2520
L	1821	EMI FILTER	DTL1106
L	1831	EMI FILTER	DTL1106
L	3301	INDUCTOR	VTL1180
L	3302	INDUCTOR	ATL7015
L	5101	INDUCTOR	CTF1305
L	5122	EMI FILTER	DTL1106
L	5201	COIL	ATH7015
L	5202	COIL	ATH7015
L	5601	EMI FILTER	DTL1106
L	5701	INDUCTOR	CTF1382
L	5801	EMI FILTER	DTL1106
L	5802	EMI FILTER	DTL1106
L	5806	COIL	ATH7022
L	5807	COIL	ATH7022
L	5808	COIL	ATH7022
L	5809	COIL	ATH7022
L	5810	EMI FILTER	DTL1106
L	5811	EMI FILTER	DTL1106
L	5812	EMI FILTER	DTL1106
L	6101	EMI FILTER	DTL1106
L	6103	EMI FILTER	DTL1106
L	6302	EMI FILTER	DTL1106
L	6304	EMI FILTER	DTL1106
L	6306	EMI FILTER	DTL1106
L	6307	EMI FILTER	DTL1106
L	6308	EMI FILTER	DTL1106
L	6311	INDUCTOR	CTF1357
L	6312	EMI FILTER	DTL1106
JA	5701	JACK	VKB1242
JA	5801	HDMI CONNECTOR	AKP7220
X	101	CERAMIC RESONATOR	DSS1157
X	1001	CRYSTAL RESONATOR	VSS1220
X	1002	CRYSTAL RESONATOR	VSS1172
X	5101	CRYSTAL	VSS1211
X	5201	CRYSTAL	VSS1218
X	5502	CRYSTAL	VSS1214
X	6301	CRYSTAL RESONATOR	VSS1223
CN	101	CONNECTOR	DKN1404
CN	103	CONNECTOR	VKN2030
CN	201	CONNECTOR	VKN2029
CN	501	CONNECTOR	DKN1312
CN	502	4P CONNECTOR	DKN1288
CN	601	5P CONNECTOR	DKN1402
CN	1401	CONNECTOR	VKN2030
CN	1402	07P CONNECTOR	RKN1048
CN	2301	22P CONNECTOR	VKN1426
CN	2302	22P CONNECTOR	VKN1426
CN	3801	FFC CONNECTOR	VKN1811
CN	4501	KR CONNECTOR	S13B-PH-K-S
CN	4701	CONNECTOR	VKN2048
CN	5101	CONNECTOR	VKN1932
CN	5201	CONNECTOR	VKN1936
CN	5604	SATA PLUG HEADER	VKN2063

RESISTORS

Mark	No.	Description	Part No.
R	104		RS1/16SS123J
R	105		RS1/16SS0R0J
R	107		RS1/16SS473J
R	108		RS1/16SS682J
R	109		RS1/16SS622J
R	110		RS1/16SS102J
R	111		RS1/16SS474J
R	112		RS1/16SS474J
R	114		RS1/16SS333J
R	115		RS1/16SS0R0J
R	116		RS1/16SS332J
R	117		RS1/16SS680J
R	119		RS1/16SS0R0J
R	124		RS1/16SS0R0J
R	128		RS1/16SS0R0J
R	129		RS1/16SS0R0J
R	130		RS1/16SS221J
R	131		RS1/16SS221J
R	132		RS1/16SS221J
R	133		RS1/16SS221J
R	134		RS1/16SS473J
R	135		RS1/16SS221J
R	136		RS1/16SS221J
R	137		RS1/16SS221J
R	138		RS1/16SS473J
R	139		RS1/16SS221J
R	165		RS1/16SS821J
R	166		RS1/16SS821J
R	167		RS1/16SS821J
R	168		RS1/16SS0R0J
R	170		RS1/16SS332J
R	171		RS1/16SS332J
R	172		RS1/16SS332J
R	174		RS1/16S4701F
R	193		RS1/16SS0R0J
R	201		RS1/16SS103J
R	202		RS1/16SS330J
R	203		RS1/16SS330J
R	204		RAB4CQ330J
R	205		RAB4CQ330J
R	206		RAB4CQ330J
R	210		RS1/16SS330J
R	211		RS1/16SS0R0J
R	219	RESISTOR ARRAY	RAB4CQ472J
R	220	RESISTOR ARRAY	RAB4CQ472J
R	221		RS1/16SS473J
R	222		RS1/16SS473J
R	223		RS1/16SS220J
R	230		RS1/16SS0R0J
R	233		RS1/16SS0R0J
R	234		RS1/16SS0R0J
R	236		RS1/16SS220J
R	237		RS1/16SS103J
R	238		RS1/16SS220J
R	239		RS1/16SS103J
R	240		RS1/16SS220J
R	241		RS1/16SS103J
R	242		RS1/16SS220J
R	243		RS1/16SS103J

Mark	No.	Description	Part No.
R	244		RS1/16SS220J
R	245		RS1/16SS103J
R	248		RS1/16SS103J
R	252		RS1/16SS103J
R	253		RS1/16SS103J
R	256		RS1/16SS103J
R	271		RS1/10S0R0J
R	273		RS1/10S0R0J
R	274		RS1/10S0R0J
R	281		RS1/16SS0R0J
R	301		RS1/16SS473J
R	306		RS1/16SS222J
R	307		RS1/16SS222J
R	310		RS1/16SS102J
R	311		RS1/16SS102J
R	312		RS1/16SS102J
R	313		RS1/16SS473J
R	314		RS1/16SS102J
R	317		RAB4CQ330J
R	318		RAB4CQ330J
R	319		RAB4CQ330J
R	320		RAB4CQ330J
R	501		DCN1171
R	502		DCN1172
R	503		RS1/16SS102J
R	504		RS1/16SS102J
R	505		RS1/16SS123J
R	506		RS1/16SS102J
R	507		RS1/16SS102J
R	510		RS1/10S1R8J
R	511		RS1/10S1R8J
R	515		RS1/16SS333J
R	516		RS1/16SS123J
R	601		RS1/16SS103J
R	602		RS1/16SS103J
R	603		RS1/16SS102J
R	604		RS1/16SS102J
R	1001		RS1/16SS103J
R	1003	CHIP RESISTOR	RS1/16S6800F
R	1004		RS1/16S4700F
R	1005		RS1/16SS153J
R	1006		RS1/16SS153J
R	1013		RS1/16SS103J
R	1015		RS1/16SS220J
R	1016		RS1/16SS103J
R	1017		RS1/16SS0R0J
R	1018		RS1/16SS0R0J
R	1019		RS1/16SS0R0J
R	1021		RS1/16SS103J
R	1022	RESISTOR ARRAY	RAB4CQ220J
R	1023		RS1/16SS220J
R	1024		RS1/16SS220J
R	1025		RS1/16SS220J
R	1026		RS1/16SS220J
R	1027		RS1/16SS103J
R	1028		RS1/16SS103J
R	1029		RS1/16SS820J
R	1030		RS1/16SS220J
R	1031		RS1/16SS151J
R	1032	RESISTOR ARRAY	RAB4CQ103J
R	1033	RESISTOR ARRAY	RAB4CQ103J
R	1034	RESISTOR ARRAY	RAB4CQ103J
R	1035	RESISTOR ARRAY	RAB4CQ103J
R	1036		RS1/16S43R0D
R	1037	CHIP RESISTOR	RS1/16S1000F
R	1039		RS1/16S43R0D
R	1040	CHIP RESISTOR	RS1/16S1000F
R	1066		RS1/16SS473J
R	1068		RS1/16SS473J
R	1071		RS1/16SS103J
R	1103		RS1/16SS0R0J
R	1107		RS1/16SS0R0J
R	1110		RS1/16SS0R0J
R	1111		RS1/16SS104J
R	1132		RS1/16SS470J
R	1153		RS1/16SS472J
R	1161		RS1/16SS472J
R	1163		RS1/16SS472J
R	1164		RS1/16SS472J
R	1191		RS1/16SS472J
R	1195		RS1/16SS472J
R	1199		RS1/16SS103J
R	1205		RS1/16SS103J
R	1219		RS1/16SS0R0J
R	1240		RS1/16SS220J
R	1241	RESISTOR ARRAY	RAB4CQ0R0J
R	1242	RESISTOR ARRAY	RAB4CQ0R0J
R	1243		RS1/16SS0R0J
R	1244		RS1/16SS330J
R	1245	RESISTOR ARRAY	RAB4CQ220J
R	1246	RESISTOR ARRAY	RAB4CQ220J
R	1247		RS1/16SS220J
R	1248	RESISTOR ARRAY	RAB4CQ0R0J
R	1249	RESISTOR ARRAY	RAB4CQ0R0J
R	1250		RS1/16SS0R0J
R	1251		RS1/16SS330J
R	1252		RS1/16SS330J
R	1255	RESISTOR ARRAY	RAB4CQ220J
R	1256	RESISTOR ARRAY	RAB4CQ220J
R	1257		RS1/16SS220J
R	1258		RS1/16SS220J
R	1260		RS1/16SS220J
R	1261	RESISTOR ARRAY	RAB4CQ0R0J
R	1262	RESISTOR ARRAY	RAB4CQ0R0J
R	1263		RS1/16SS0R0J
R	1264		RS1/16SS330J
R	1265	RESISTOR ARRAY	RAB4CQ220J
R	1266	RESISTOR ARRAY	RAB4CQ220J
R	1267		RS1/16SS220J
R	1268	RESISTOR ARRAY	RAB4CQ0R0J
R	1269	RESISTOR ARRAY	RAB4CQ0R0J
R	1270		RS1/16SS0R0J
R	1271		RS1/16SS330J
R	1272		RS1/16SS330J
R	1273	RESISTOR ARRAY	RAB4CQ220J
R	1274	RESISTOR ARRAY	RAB4CQ220J
R	1275		RS1/16SS220J
R	1276		RS1/16SS220J
R	1277		RS1/16SS0R0J
R	1278		RS1/16SS0R0J

Mark	No.	Description	Part No.
R	1279		RS1/16SS391J
R	1281	RESISTOR ARRAY	RAB4CQ470J
R	1282	RESISTOR ARRAY	RAB4CQ470J
R	1283	RESISTOR ARRAY	RAB4CQ470J
R	1284		RS1/16SS470J
R	1285		RS1/16SS470J
R	1286		RS1/16SS470J
R	1287	RESISTOR ARRAY	RAB4CQ470J
R	1288		RS1/16SS220J
R	1289		RS1/16SS220J
R	1301		RS1/16S4700F
R	1302		RS1/16S1001F
R	1303		RS1/16S1001F
R	1312		RS1/16S1001F
R	1313		RS1/16S1001F
R	1314		RS1/16S0R0J
R	1401		RS1/16SS220J
R	1402		RS1/16SS220J
R	1403		RS1/16SS220J
R	1404		RS1/16SS220J
R	1405		RS1/16SS220J
R	1406		RS1/16SS220J
R	1407		RS1/16SS220J
R	1411	RESISTOR ARRAY	RAB4CQ103J
R	1412		RS1/16SS103J
R	1413		RS1/16SS473J
R	1414		RS1/16SS220J
R	1415		RS1/16SS220J
R	1416		RS1/16SS220J
R	1421		RS1/16SS103J
R	1422		RS1/16SS103J
R	1802		RS1/16SS221J
R	1803		RS1/16SS331J
R	1804		RS1/16SS330J
R	1812		RS1/16SS221J
R	1813		RS1/16SS331J
R	1814		RS1/16SS330J
R	2301		RS1/16SS332J
R	2302		RS1/16SS0R0J
R	3002		RS1/16SS0R0J
R	3003		RS1/16SS0R0J
R	3004		RS1/16SS0R0J
R	3005	RESISTOR ARRAY	RAB4CQ103J
R	3006		RS1/16SS0R0J
R	3007		RS1/16SS0R0J
R	3008		RS1/16SS0R0J
R	3009		RS1/16SS0R0J
R	3010		RS1/16SS0R0J
R	3011		RS1/16SS0R0J
R	3012		RS1/16SS0R0J
R	3101		RS1/16SS0R0J
R	3102		RS1/16SS0R0J
R	3103		RS1/16SS0R0J
R	3104		RS1/16SS0R0J
R	3105		RS1/16SS105J
R	3106		RS1/16SS103J
R	3107		RS1/16SS470J
R	3108		RS1/16SS470J
R	3109		RS1/16SS470J
R	3111		RS1/16SS0R0J
R	3113		RS1/16SS103J
R	3131		RS1/16SS0R0J
R	3132		RS1/16SS0R0J
R	3201		RS1/16SS470J
R	3202		RS1/16SS470J
R	3203		RS1/16SS470J
R	3204		RS1/16SS0R0J
R	3206		RS1/16SS470J
R	3207		RS1/16SS470J
R	3208		RS1/16SS470J
R	3210		RS1/16SS103J
R	3211		RS1/16S4300D
R	3213		RS1/16SS102J
R	3214		RS1/16SS103J
R	3215		RS1/16SS103J
R	3216		RS1/16SS103J
R	3217		RS1/16S4300D
R	3219		RS1/16S4300D
R	3220		RS1/16S6800D
R	3221		RS1/16S1500D
R	3222		RS1/16S4300D
R	3223		RS1/16S1500D
R	3224		RS1/16S1301D
R	3227		RS1/16S1301D
R	3228		RS1/16SS103J
R	3229		RS1/16SS103J
R	3230		RS1/10S0R0J
R	3232		RS1/16SS0R0J
R	3233		RS1/16SS0R0J
R	3234		RS1/16SS0R0J
R	3235		RS1/16SS470J
R	3237		RS1/16S1001D
R	3238		RS1/16S1001D
R	3239		RS1/16SS103J
R	3240		RS1/16S4300D
R	3241		RS1/16S4300D
R	3242		RS1/16SS103J
R	3243		RS1/16S4300D
R	3244		RS1/16S4300D
R	3245		RS1/16S6800D
R	3246		RS1/16S1500D
R	3247		RS1/16S1500D
R	3248		RS1/16S1301D
R	3249		RS1/16S1301D
R	3250		RS1/16S1001D
R	3251		RS1/16S1001D
R	3261		RS1/16SS0R0J
R	3301		RS1/16SS470J
R	3302		RS1/16SS0R0J
R	3305		RS1/16SS331J
R	3306		RS1/16S4700F
R	3307		RS1/16S5601F
R	3308		RS1/16SS100J
R	3309		RS1/16SS681J
R	3310		RS1/16SS103J
R	3315		RS1/16SS681J
R	3320		RS1/16SS681J
R	3327		RS1/16SS681J
R	3336		RS1/16SS0R0J
R	3337		RS1/16SS103J

Mark	No.	Description	Part No.
R	3341		RS1/16SS0R0J
R	3342		RS1/16SS103J
R	3703		RS1/16SS101J
R	3704		RS1/16SS101J
R	3705		RS1/16SS101J
R	3708		RS1/16SS103J
R	3715		RS1/16SS0R0J
R	3716		RS1/16SS330J
R	3720		RS1/16SS0R0J
R	3732		RS1/16SS561J
R	3738		RS1/16SS103J
R	3808		RS1/16SS101J
R	3810		RAB4CQ330J
R	3811		RAB4CQ330J
R	3812		RAB4CQ330J
R	3813		RAB4CQ330J
R	3814		RS1/16SS220J
R	3816		RS1/16SS820J
R	3817		RS1/16SS820J
R	3818		RS1/16SS220J
R	3820		RS1/16SS820J
R	3821		RS1/16SS220J
R	3823		RS1/16SS820J
R	3824	RESISTOR ARRAY	RAB4CQ820J
R	3828	RESISTOR ARRAY	RAB4CQ223J
R	3829	RESISTOR ARRAY	RAB4CQ223J
R	3830	RESISTOR ARRAY	RAB4CQ223J
R	3831	RESISTOR ARRAY	RAB4CQ223J
R	3832	RESISTOR ARRAY	RAB4CQ223J
R	3833	RESISTOR ARRAY	RAB4CQ223J
R	3835		RS1/16SS330J
R	3837		RAB4CQ330J
R	3838		RAB4CQ330J
R	3839		RAB4CQ330J
R	3840		RAB4CQ330J
R	3841		RS1/16SS820J
R	3842		RS1/16SS562J
R	3843		RS1/16SS220J
R	3844		RS1/16SS220J
R	3845		RS1/16SS820J
R	3846		RS1/16SS102J
R	3847		RS1/16SS220J
R	3848		RS1/16SS820J
R	3849		RS1/16SS103J
R	3850		RS1/16SS330J
R	3851		RAB4CQ330J
R	3857		RS1/16SS0R0J
R	3862		RS1/16SS0R0J
R	3871		RS1/16SS223J
R	4501		RS1/10S0R0J
R	4511		RS1/16SS0R0J
R	4521		RS1/16SS682J
R	4526		RS1/16SS153J
R	4531		RS1/16SS0R0J
R	4541		RS1/16SS0R0J
R	4552		RS1/10S0R0J
R	4553		RS1/10S0R0J
R	4554		RS1/10S0R0J
R	4556		RS1/10S0R0J
R	4558		RS1/16SS223J
R	4559		RS1/16SS0R0J
R	4573		RS1/16SS0R0J
R	4574		RS1/16S0R0J
R	4575		RS1/16S0R0J
R	4581		RS1/16SS101J
R	4601		RS1/16SS223J
R	4611		RS1/16SS0R0J
R	4621		RS1/16SS472J
R	4622		RS1/16SS0R0J
R	4623		RS1/16SS0R0J
R	4624		RS1/16SS0R0J
R	4632		RS1/16S0R0J
R	4633		RS1/16SS472J
R	4634		RS1/16S0R0J
R	4635		RS1/16SS102J
R	4641		RS1/16SS821J
R	4642		RS1/16SS102J
R	4652		RS1/16S0R0J
R	4653		RS1/16S0R0J
R	4654		RS1/16SS0R0J
R	4661		RS1/16SS0R0J
R	4671		RS1/16SS102J
R	4672		RS1/10S102J
R	4681		RS1/16SS0R0J
R	4701	RESISTOR ARRAY	RAB4CQ101J
R	4702	RESISTOR ARRAY	RAB4CQ101J
R	4703		RS1/16SS101J
R	4704		RS1/16SS0R0J
R	4705		RS1/16SS0R0J
R	4706		RS1/16SS0R0J
R	4707		RS1/16SS103J
R	4708	RESISTOR ARRAY	RAB4CQ103J
R	4709	RESISTOR ARRAY	RAB4CQ103J
R	4710		RS1/16SS103J
R	4711		RS1/16SS103J
R	4712		RS1/16SS103J
R	4713		RS1/16SS103J
R	4714		RS1/16SS0R0J
R	4721	RESISTOR ARRAY	RAB4CQ101J
R	4722	RESISTOR ARRAY	RAB4CQ101J
R	4723		RS1/16SS470J
R	4724		RS1/16SS220J
R	4725		RS1/16SS220J
R	4726		RS1/16SS220J
R	4727		RS1/16SS103J
R	4728		RS1/16SS103J
R	4729		RS1/16SS0R0J
R	4731		RS1/16SS472J
R	4732		RS1/16SS472J
R	4733		RS1/16SS0R0J
R	5101	RESISTOR ARRAY	RAB4CQ104J
R	5102	RESISTOR ARRAY	RAB4CQ104J
R	5103		RS1/16SS104J
R	5104		RS1/16SS104J
R	5105	RESISTOR ARRAY	RAB4CQ680J
R	5106	RESISTOR ARRAY	RAB4CQ680J
R	5107		RS1/16SS680J
R	5108		RS1/16SS680J
R	5109		RS1/16SS470J
R	5110		RS1/16SS103J

Mark	No.	Description	Part No.
R	5111		RS1/16SS102J
R	5113		RS1/16SS103J
R	5114		RS1/16SS103J
R	5115		RS1/16SS103J
R	5116		RS1/16SS103J
R	5117		RS1/16SS104J
R	5118		RN1/16SE9101D
R	5119	CHIP RESISTOR	RS1/16S56R0D
R	5120	CHIP RESISTOR	RS1/16S56R0D
R	5121	CHIP RESISTOR	RS1/16S56R0D
R	5122	CHIP RESISTOR	RS1/16S56R0D
R	5123		RS1/16SS103J
R	5124		RS1/16SS103J
R	5125		RS1/16SS102J
R	5127		RS1/16SS103J
R	5129		RS1/16SS820J
R	5130		RS1/16SS0R0J
R	5131		RN1/16SE5101D
R	5132		RS1/16SS0R0J
R	5133		RS1/16SS0R0J
R	5134		RS1/16SS0R0J
R	5135		RS1/16SS0R0J
R	5140		RS1/16SS103J
R	5141		RS1/16SS0R0J
R	5201		RS1/16SS0R0J
R	5202		RS1/16SS0R0J
R	5203		RS1/16S3301F
R	5204		RS1/16S8200F
R	5205		RS1/16SS680J
R	5206		RS1/16SS103J
R	5207		RS1/16SS0R0J
R	5208		RS1/16SS103J
R	5212		RS1/16SS0R0J
R	5213		RS1/16SS0R0J
R	5214		RS1/16SS473J
R	5215		RS1/16SS473J
R	5216		RS1/16SS0R0J
R	5217		RS1/16SS0R0J
R	5220		RS1/16S1501F
R	5221		RS1/16SS473J
R	5222		RS1/16SS100J
R	5445		RS1/10S0R0J
R	5606		RS1/16SS820J
R	5607		RS1/16SS820J
R	5608		RS1/16SS103J
R	5609		RS1/16SS103J
R	5610		RS1/16SS102J
R	5612		RS1/16SS103J
R	5613		RS1/16SS102J
R	5614		RS1/16SS102J
R	5615		RS1/16SS102J
R	5616		RS1/16SS103J
R	5618		RS1/16SS103J
R	5619		RS1/16SS102J
R	5622		RS1/16SS820J
R	5623		RS1/16SS820J
R	5624		RS1/16SS820J
R	5626		RS1/16SS220J
R	5627		RS1/16SS820J
R	5628		RS1/16SS220J

Mark	No.	Description	Part No.
R	5629		RS1/16SS820J
R	5630		RS1/16SS820J
R	5631		RS1/16SS220J
R	5632		RAB4CQ330J
R	5638		RAB4CQ330J
R	5642		RAB4CQ330J
R	5646		RAB4CQ330J
R	5650		RS1/16SS820J
R	5651		RS1/16S1202F
R	5652		RS1/16SS101J
R	5657		RS1/16SS102J
R	5658		RS1/16SS102J
R	5659		RS1/16SS102J
R	5661		RS1/16SS102J
R	5664		RS1/16S0R0J
R	5672		RS1/16S0R0J
R	5688		RS1/16SS105J
R	5689		RS1/16SS152J
R	5690		RS1/16SS0R0J
R	5692		RS1/16SS0R0J
R	5693		RS1/16SS0R0J
R	5701		RS1/16SS471J
R	5702		RS1/16SS471J
R	5703		RS1/16SS681J
R	5704		RS1/16SS151J
R	5705		RS1/16S0R0J
R	5706	CHIP RESISTOR	RS1/16S75R0F
R	5707		RS1/16SS104J
R	5802		RS1/16S0R0J
R	5803		RS1/16SS473J
R	5804		RS1/16SS472J
R	5805		RS1/16SS102J
R	5806		RS1/16SS562J
R	5807		RS1/16SS472J
R	5808		RS1/16SS272J
R	5809		RS1/16SS472J
R	5810		RS1/16SS272J
R	5811		RS1/16SS472J
R	5812		RS1/16SS272J
R	5814		RS1/16SS472J
R	5815		RS1/16SS472J
R	5816		RS1/16SS472J
R	5817		RS1/16SS472J
R	5819		RS1/10S0R0J
R	5820		RS1/16S0R0J
R	5821		RS1/16SS472J
R	5822		RS1/16SS103J
R	5823		RS1/16SS103J
R	5824		RS1/16SS102J
R	5825		RS1/16SS561J
R	5826		RS1/16SS222J
R	5827		RS1/16SS472J
R	5828		RS1/16SS273J
R	5830		RS1/16SS470J
R	5832		RS1/16SS103J
R	5833		RS1/16SS103J
R	5841		RS1/16SS0R0J
R	5843		RS1/16SS0R0J
R	5846		RS1/16SS472J
R	5851		RS1/16SS100J

Mark	No.	Description	Part No.
R	5852		RS1/16SS100J
R	5854		RS1/16SS101J
R	5855		RS1/16SS101J
R	5856		RS1/16SS103J
R	5858		RS1/16SS0R0J
R	5859		RS1/16SS0R0J
R	5860		RS1/16SS0R0J
R	5866		RS1/16SS180J
R	5867	CHIP RESISTOR	RS1/16S6800F
R	5871		RS1/16SS330J
R	5875		RN1/16SE1000D
R	5881		RS1/16SS0R0J
R	5882		RS1/16SS0R0J
R	5883		RS1/16SS0R0J
R	5884		RS1/16SS0R0J
R	5885		RS1/16SS0R0J
R	6001		RS1/16SS0R0J
R	6101		RS1/16SS470J
R	6102		RS1/16SS470J
R	6103		RS1/16SS470J
R	6104		RS1/16SS470J
R	6105	RESISTOR ARRAY	RAB4CQ220J
R	6106	RESISTOR ARRAY	RAB4CQ220J
R	6107	RESISTOR ARRAY	RAB4CQ220J
R	6108	RESISTOR ARRAY	RAB4CQ220J
R	6109	RESISTOR ARRAY	RAB4CQ220J
R	6110	RESISTOR ARRAY	RAB4CQ220J
R	6111	RESISTOR ARRAY	RAB4CQ220J
R	6112		RS1/16S1802F
R	6113		RS1/16S1502F
R	6114		RS1/16S1002F
R	6115	RESISTOR ARRAY	RAB4CQ680J
R	6116	RESISTOR ARRAY	RAB4CQ680J
R	6117		RS1/16SS0R0J
R	6119	RESISTOR ARRAY	RAB4CQ220J
R	6120	RESISTOR ARRAY	RAB4CQ220J
R	6121	RESISTOR ARRAY	RAB4CQ220J
R	6122	RESISTOR ARRAY	RAB4CQ220J
R	6124		RS1/16SS0R0J
R	6125		RS1/16SS0R0J
R	6127		RS1/16SS0R0J
R	6128		RS1/10S0R0J
R	6129		RS1/16SS470J
R	6130		RS1/16SS0R0J
R	6131		RS1/16SS220J
R	6132		RS1/16SS681J
R	6133		RS1/16SS0R0J
R	6135		RS1/16SS0R0J
R	6136		RS1/16SS220J
R	6137		RS1/16SS220J
R	6139	RESISTOR ARRAY	RAB4CQ103J
R	6140	RESISTOR ARRAY	RAB4CQ103J
R	6143	RESISTOR ARRAY	RAB4CQ103J
R	6144	RESISTOR ARRAY	RAB4CQ103J
R	6145	RESISTOR ARRAY	RAB4CQ103J
R	6146	RESISTOR ARRAY	RAB4CQ103J
R	6147	RESISTOR ARRAY	RAB4CQ103J
R	6148	RESISTOR ARRAY	RAB4CQ103J
R	6149	RESISTOR ARRAY	RAB4CQ103J
R	6150		RS1/16SS0R0J
R	6152		RS1/10S0R0J
R	6153	RESISTOR ARRAY	RAB4CQ103J
R	6154	RESISTOR ARRAY	RAB4CQ103J
R	6302		RS1/16SS472J
R	6304		RS1/16SS0R0J
R	6317	RESISTOR ARRAY	RAB4CQ100J
R	6318	RESISTOR ARRAY	RAB4CQ680J
R	6319	RESISTOR ARRAY	RAB4CQ680J
R	6322		RS1/16SS100J
R	6325	RESISTOR ARRAY	RAB4CQ100J
R	6326	RESISTOR ARRAY	RAB4CQ680J
R	6327	RESISTOR ARRAY	RAB4CQ680J
R	6331	RESISTOR ARRAY	RAB4CQ100J
R	6334		RS1/16SS680J
R	6335		RS1/16SS680J
R	6337		RS1/16SS0R0J
R	6338		RS1/16SS100J
R	6339		RS1/16SS102J
R	6340	RESISTOR ARRAY	RAB4CQ100J
R	6341		RS1/16SS100J
R	6342		RS1/16SS100J
R	6349		RS1/16SS0R0J
R	6350		RS1/16SS0R0J
R	6353		RS1/16SS471J
R	6354		RS1/16SS0R0J
R	6356		RS1/16SS0R0J
R	6360		RS1/16SS0R0J
R	6364		RS1/16SS0R0J
R	6365		RS1/16SS0R0J
R	6366		RS1/16SS0R0J
R	6367		RS1/16SS0R0J
R	6368		RS1/16SS0R0J
R	6369		RS1/16SS0R0J
R	6370	RESISTOR ARRAY	RAB4CQ0R0J
R	6374	RESISTOR ARRAY	RAB4CQ0R0J
R	6377	RESISTOR ARRAY	RAB4CQ0R0J
R	6378		RS1/16SS0R0J
R	6380		RS1/16SS105J
R	6381		RS1/16SS101J
R	6391		RS1/16SS470J
R	6393	RESISTOR ARRAY	RAB4CQ220J
R	6394	RESISTOR ARRAY	RAB4CQ220J
R	6397		RS1/16SS101J
R	6398		RS1/16SS101J
R	6399	RESISTOR ARRAY	RAB4CQ220J
R	6400	RESISTOR ARRAY	RAB4CQ220J
R	6401	RESISTOR ARRAY	RAB4CQ220J
R	6402	RESISTOR ARRAY	RAB4CQ220J
R	6403	RESISTOR ARRAY	RAB4CQ220J
R	6404	RESISTOR ARRAY	RAB4CQ220J
R	6405	CHIP RESISTOR	RS1/16S2700F
R	6406		RS1/16S4700F
R	6407		RS1/16SS0R0J
R	6409		RS1/16SS102J
R	6410	CHIP RESISTOR	RS1/16S2700F
R	6411		RS1/16S4700F
R	6412		RS1/16SS680J
R	6414		RS1/16SS102J
R	6415		RS1/16S3900F
R	6416		RS1/16S5600F

Mark	No.	Description	Part No.
R	6417		RS1/16SS0R0J
R	6419		RS1/16SS102J
R	6420		RS1/16S3900F
R	6421		RS1/16S5600F
R	6422		RS1/16SS0R0J
R	6424		RS1/16SS102J
R	6425		RS1/16S3900F
R	6426		RS1/16S5600F
R	6427		RS1/16SS0R0J
R	6429		RS1/16SS102J
R	6430	CHIP RESISTOR	RS1/16S2700F
R	6431		RS1/16S4700F
R	6432		RS1/16SS0R0J
R	6434		RS1/16SS102J
R	6436		RS1/16SS472J
R	6437		RS1/16SS472J
R	6439		RS1/16SS472J
R	6440		RS1/16SS102J
R	6441		RS1/16SS102J
R	6442		RS1/16SS0R0J
R	6443		RS1/16SS0R0J
R	6444		RS1/16SS0R0J
R	6445		RS1/16SS0R0J
R	6448		RS1/16SS0R0J
R	6449		RS1/16SS0R0J
R	6470		RS1/16SS100J
R	6472		RS1/16S1001F
R	6473		RS1/16S1001F
R	6474		RS1/16S0R0J
R	6475		RS1/16SS0R0J
R	6476		RS1/16SS0R0J
R	6477		RS1/16SS561J
R	6478		RS1/16SS0R0J
R	6479		RS1/10S0R0J
R	6480		RS1/16SS0R0J

CAPACITORS

Mark	No.	Description	Part No.
C	100		CKSSYB102K50
C	101		CKSSYB102K50
C	103	CHIP PX CAPACITOR	VCH1234
C	104	CAPACITOR(CERAMIC)	VCG1057
C	105		CKSSYB102K50
C	106		CKSSYF104Z16
C	107		CKSSYB681K50
C	113		CKSSYB472K25
C	114		CKSSYB472K25
C	115		CKSSYB103K16
C	116		CKSSYB104K10
C	117		CKSSYB102K50
C	120		CKSSYB104K10
C	121		CKSSYB222K50
C	122		CKSSYB222K50
C	124		CKSSYB104K10
C	125	CAPACITOR(CERAMIC)	VCG1058
C	127		CKSSYB473K10
C	128		CKSSYB104K10
C	129	CAPACITOR(CERAMIC)	VCG1058
C	130		CKSQYB475K6R3
C	131		CKSSYB683K10
C	133		CKSSYB104K10
C	134		CKSSYB104K10
C	135		CKSSYB103K16
C	136		CKSSYB104K10
C	137		CKSSYB682K25
C	140	ELECT. CAPACITOR	DCH1199
C	141	ELECT. CAPACITOR	DCH1199
C	142		DCH1201
C	143		DCH1201
C	144		CKSSYB103K16
C	145		CKSSYB103K16
C	146		DCH1201
C	147	ELECT. CAPACITOR	DCH1198
C	148	ELECT. CAPACITOR	DCH1198
C	149		CKSSYB103K16
C	152		CKSSYB102K50
C	153		CEVW100M16
C	154	CAPACITOR(CERAMIC)	VCG1057
C	155	ELECT. CAPACITOR	DCH1199
C	156		CKSSYB182K50
C	157		CKSSYB103K16
C	158		CKSSYB103K16
C	159		CKSSYF104Z16
C	162	CAPACITOR(CERAMIC)	VCG1057
C	163	CHIP ELECT.CAPACITOR	CEVW221M4
C	164		CKSSYB102K50
C	165		CCSSCH220J50
C	166		CCSSCH220J50
C	167		CKSSYF104Z16
C	169		CKSSYB104K10
C	170		CCSSCH470J50
C	171		CKSSYB104K10
C	172		CCSSCH470J50
C	173		CCSSCH470J50
C	174		CCSSCH470J50
C	176		CCSSCH220J50
C	177		CCSSCH220J50
C	180		DCH1201
C	181		CKSQYB475K6R3
C	182		DCH1201
C	187		CKSSYB103K16
C	188		CKSSYB103K16
C	189		CKSSYB102K50
C	194		CKSQYB475K6R3
C	197		CKSSYB104K10
C	199	CAPACITOR(CERAMIC)	VCG1057
C	201		CKSSYB104K10
C	202	CAPACITOR(CERAMIC)	VCG1057
C	280	CAPACITOR(CERAMIC)	VCG1058
C	281	CAPACITOR(CERAMIC)	VCG1058
C	282	CAPACITOR(CERAMIC)	VCG1058
C	283	CAPACITOR(CERAMIC)	VCG1058
C	284	CAPACITOR(CERAMIC)	VCG1058
C	285	CAPACITOR(CERAMIC)	VCG1058
C	286		DCH1201
C	287	CAPACITOR(CERAMIC)	VCG1058
C	288		CKSSYF104Z16
C	289		CKSSYB102K50
C	290		CKSSYF104Z16
C	291		CKSSYB102K50
C	501		CKSSYF104Z16

Mark	No.	Description	Part No.
C	502	CHIP CERAMIC C.	DCH1263
C	503		CKSRYB471K50
C	504		CKSSYB104K10
C	505		CKSRYB104K25
C	508		CKSSYB102K50
C	509		CCSSCH330J50
C	510		CCSSCH680J50
C	511		CKSQYB105K16
C	512		CKSRYF104Z16
C	513		CKSRYF104Z16
C	514		CKSRYB104K25
C	515		CKSRYB104K25
C	516		CKSSYB104K10
C	532		CKSSYB104K10
C	1001		CKSSYB104K10
C	1002		CKSSYB104K10
C	1003	CHIP ELECT.CAPACITOR	CEVW101M4
C	1004	CAPACITOR(CERAMIC)	VCG1057
C	1005		CKSSYB102K50
C	1006	CAPACITOR(CERAMIC)	VCG1057
C	1007	CHIP ELECT.CAPACITOR	CEVW221M4
C	1008	CAPACITOR(CERAMIC)	VCG1057
C	1009	CHIP PX CAPACITOR	VCH1234
C	1010	CAPACITOR(CERAMIC)	VCG1057
C	1011		CKSSYB102K50
C	1012	CHIP PVO CAPACITOR	VCH1268
C	1013	CAPACITOR(CERAMIC)	VCG1057
C	1014		CKSSYB102K50
C	1015		CKSSYB104K10
C	1016		CKSSYB104K10
C	1017		CKSSYB104K10
C	1018		CKSSYB104K10
C	1019		CKSSYB104K10
C	1020		CEVW100M16
C	1021		DCH1201
C	1022	CAPACITOR(CERAMIC)	VCG1057
C	1023		CKSSYB102K50
C	1024	CHIP ELECT.CAPACITOR	CEVW101M4
C	1025	CAPACITOR(CERAMIC)	VCG1057
C	1026		CKSSYB102K50
C	1027		CKSSYB104K10
C	1028		CKSSYB104K10
C	1029		CKSSYB104K10
C	1030		CKSSYB104K10
C	1031		CKSSYB104K10
C	1032		CKSSYB104K10
C	1033		CKSSYB104K10
C	1034		CKSSYB104K10
C	1035		CKSSYB104K10
C	1036	CHIP ELECT.CAPACITOR	CEVW101M4
C	1037	CAPACITOR(CERAMIC)	VCG1057
C	1038		CKSSYB102K50
C	1039	CHIP ELECT.CAPACITOR	CEVW101M4
C	1040	CAPACITOR(CERAMIC)	VCG1057
C	1041		CKSSYB102K50
C	1042		CCSSCJ3R0C50
C	1043		CCSSCJ3R0C50
C	1044		CCSSCH5R0C50
C	1045		CCSSCH5R0C50
C	1047		CKSSYB104K10

Mark	No.	Description	Part No.
C	1048	CAPACITOR(CERAMIC)	VCG1057
C	1049		CKSSYB102K50
C	1050	CHIP ELECT.CAPACITOR	CEVW101M4
C	1051		DCH1201
C	1052	CAPACITOR(CERAMIC)	VCG1057
C	1053		CKSSYB102K50
C	1056	CAPACITOR(CERAMIC)	VCG1057
C	1057		CKSSYF104Z16
C	1058		CKSSYB103K16
C	1059	CAPACITOR(CERAMIC)	VCG1057
C	1060		CKSSYF104Z16
C	1061		CKSSYB102K50
C	1062	CAPACITOR(CERAMIC)	VCG1057
C	1063		CKSSYF104Z16
C	1064		CKSSYB102K50
C	1065		CKSSYB102K50
C	1066	CAPACITOR(CERAMIC)	VCG1057
C	1067		CKSSYF104Z16
C	1068		CKSSYB102K50
C	1101		CKSSYB102K50
C	1104	CAPACITOR(CERAMIC)	VCG1057
C	1105		CKSSYF104Z16
C	1113	CAPACITOR(CERAMIC)	VCG1057
C	1202	CAPACITOR(CERAMIC)	VCG1057
C	1203		CKSSYF104Z16
C	1204	CAPACITOR(CERAMIC)	VCG1057
C	1205		CKSSYB103K16
C	1206		CKSSYB103K16
C	1207		CKSSYB102K50
C	1208	CAPACITOR(CERAMIC)	VCG1057
C	1209		CKSSYB102K50
C	1210		CKSSYB102K50
C	1211		CKSSYF104Z16
C	1212		CKSSYF104Z16
C	1213		CKSSYF104Z16
C	1214		CKSSYF104Z16
C	1215	CHIP PVO CAPACITOR	VCH1268
C	1216	CAPACITOR(CERAMIC)	VCG1057
C	1217	CAPACITOR(CERAMIC)	VCG1057
C	1218	CAPACITOR(CERAMIC)	VCG1057
C	1219	CAPACITOR(CERAMIC)	VCG1057
C	1220	CAPACITOR(CERAMIC)	VCG1057
C	1221	CAPACITOR(CERAMIC)	VCG1057
C	1222		CKSSYF104Z16
C	1223	CAPACITOR(CERAMIC)	VCG1057
C	1224		CKSSYB103K16
C	1225		CKSSYB103K16
C	1226		CKSSYB102K50
C	1227	CAPACITOR(CERAMIC)	VCG1057
C	1228		CKSSYB102K50
C	1229		CKSSYB102K50
C	1230		CKSSYF104Z16
C	1231		DCH1201
C	1235		DCH1201
C	1236	CHIP PVO CAPACITOR	VCH1268
C	1291		CKSSYF104Z16
C	1301		CKSQYB225K10
C	1302		CKSSYF104Z16
C	1303		CKSSYF104Z16
C	1304		CEVW470M6R3

Mark	No.	Description	Part No.
C	1312		CKSSYF104Z16
C	1313		CKSSYF104Z16
C	1315		CKSQYB225K10
C	1316		DCH1201
C	1401		CKSSYB103K16
C	1421	CAPACITOR(CERAMIC)	VCG1057
C	1801	CAPACITOR(CERAMIC)	VCG1057
C	1802		CKSQYB225K10
C	1803		CCSSCH221J50
C	1804		CKSSYB331K50
C	1805		CKSSYB473K10
C	1811	CAPACITOR(CERAMIC)	VCG1057
C	1812		CKSQYB225K10
C	1813		CCSSCH101J50
C	1814		CCSSCH151J50
C	1815		CKSSYB473K10
C	2305	CAPACITOR(CERAMIC)	VCG1058
C	3103		CEVW101M16
C	3104	CAPACITOR(CERAMIC)	VCG1057
C	3105		CKSSYF104Z16
C	3106		CKSSYB102K50
C	3107	CAPACITOR(CERAMIC)	VCG1057
C	3108	CHIP ELECT.CAPACITOR	CEVW221M4
C	3131		CKSSYB102K50
C	3132	CAPACITOR(CERAMIC)	VCG1057
C	3201	ELECT. CAPACITOR	CEAT102M6R3
C	3202		CKSSYF104Z16
C	3203		CKSSYB102K50
C	3204		CKSSYB331K50
C	3206		CKSSYF104Z16
C	3207		CEVW100M16
C	3211		CEVW101M16
C	3212		CKSSYF104Z16
C	3213		CKSSYB122K50
C	3214		CKSSYB122K50
C	3215		CKSSYB122K50
C	3216		CKSSYB122K50
C	3217		CKSSYF104Z16
C	3218		CEVW101M16
C	3219	CHIP ELECT.CAPACITOR	CEVW221M4
C	3220	CAPACITOR(CERAMIC)	VCG1057
C	3221		CKSSYF104Z16
C	3222		CKSSYF104Z16
C	3223	CAPACITOR(CERAMIC)	VCG1057
C	3224	CAPACITOR(CERAMIC)	VCG1057
C	3225		CEVW100M16
C	3226		CKSSYF104Z16
C	3227		CEVW100M16
C	3228		CEVW100M16
C	3229		CCSSCH220J50
C	3230		CCSSCH220J50
C	3231		CKSSYF104Z16
C	3232		CEVW100M16
C	3233		CKSSYB122K50
C	3234		CEVW100M16
C	3235		CKSSYB122K50
C	3236		CKSSYB122K50
C	3237		CKSSYB122K50
C	3238		CCSSCH220J50
C	3239		CCSSCH220J50

Mark	No.	Description	Part No.
C	3240		CKSSYB102K50
C	3241	CAPACITOR(CERAMIC)	VCG1057
C	3261		CKSQYB225K10
C	3271		CKSQYB225K10
C	3272		CEVW101M16
C	3301		CCSSCH7R0D50
C	3302		CCSSCH7R0D50
C	3303		CCSSCH150J50
C	3304		CCSSCH680J50
C	3305		CCSSCH5R0C50
C	3307		CKSRYB105K10
C	3313		CKSRYB105K10
C	3319		CKSRYB105K10
C	3325		CKSRYB105K10
C	3332	CAPACITOR(CERAMIC)	VCG1057
C	3342	CAPACITOR(CERAMIC)	VCG1057
C	3701		CKSSYB103K16
C	3703	CAPACITOR(CERAMIC)	VCG1057
C	3704		DCH1201
C	3705		CKSSYB102K50
C	3706		CKSSYB102K50
C	3707	CAPACITOR(CERAMIC)	VCG1057
C	3738	CAPACITOR(CERAMIC)	VCG1057
C	3801	CAPACITOR(CERAMIC)	VCG1057
C	3802	CAPACITOR(CERAMIC)	VCG1057
C	3803	CAPACITOR(CERAMIC)	VCG1057
C	3804	CAPACITOR(CERAMIC)	VCG1057
C	4501	CAPACITOR(CERAMIC)	VCG1057
C	4502	CAPACITOR(CERAMIC)	VCG1057
C	4503	CAPACITOR(CERAMIC)	VCG1057
C	4504		CKSSYF104Z16
C	4505	CAPACITOR(CERAMIC)	VCG1057
C	4506		CKSSYF104Z16
C	4507		CEVW101M16
C	4508	CHIP ELECT.CAPACITOR	CEVW221M4
C	4509		CEVW101M16
C	4511		CKSQYB475K6R3
C	4513		CKSQYB475K6R3
C	4515		CEVW470M6R3
C	4516		CEVW100M16
C	4524		CKSQYB475K6R3
C	4525		CKSQYB475K6R3
C	4531	CAPACITOR(CERAMIC)	VCG1058
C	4532		CKSSYB103K16
C	4533	CAPACITOR(CERAMIC)	VCG1058
C	4535		CKSSYB102K50
C	4536		CKSSYB102K50
C	4537		CKSSYB102K50
C	4539		CKSSYB102K50
C	4540		CKSSYB102K50
C	4541		CKSQYB475K6R3
C	4542		CKSQYB475K6R3
C	4555		CKSQYB475K6R3
C	4556		CKSQYB475K6R3
C	4557		CKSSYB103K16
C	4558		CEVW101M16
C	4559		CEVW101M16
C	4562	CAPACITOR(CERAMIC)	VCG1058
C	4563	CAPACITOR(CERAMIC)	VCG1058
C	4567	CAPACITOR(CERAMIC)	VCG1058

Mark	No.	Description	Part No.
C	4570	CAPACITOR(CERAMIC)	VCG1058
C	4571		CKSQYB475K6R3
C	4572	CHIP ELECT.CAPACITOR	CEVW221M4
C	4573		CKSQYB475K6R3
C	4581		CEVW101M16
C	4585		CKSSYF104Z16
C	4586		CEVW101M16
C	4601	CAPACITOR(CERAMIC)	VCG1058
C	4602		CKSSYB103K16
C	4603	CAPACITOR(CERAMIC)	VCG1058
C	4604	CAPACITOR(CERAMIC)	VCG1058
C	4612	CAPACITOR(CERAMIC)	VCG1058
C	4613		CKSSYB102K50
C	4614		CKSQYB225K10
C	4621		CKSQYB105K16
C	4623		CKSQYB225K10
C	4624	CAPACITOR(CERAMIC)	VCG1058
C	4625	CAPACITOR(CERAMIC)	VCG1058
C	4631		CKSQYB105K16
C	4632		CKSQYB475K6R3
C	4633	CHIP ELECT.CAPACITOR	CEVW221M4
C	4634		CKSQYB475K6R3
C	4641	CAPACITOR(CERAMIC)	VCG1058
C	4642		CKSQYB475K6R3
C	4643		CKSQYB475K6R3
C	4652		CKSQYB475K6R3
C	4653	CHIP ELECT.CAPACITOR	CEVW221M4
C	4654		CKSQYB475K6R3
C	4662		CKSQYB475K6R3
C	4663		CKSQYB475K6R3
C	4671	CAPACITOR(CERAMIC)	VCG1058
C	4673	CAPACITOR(CERAMIC)	VCG1058
C	4676	CAPACITOR(CERAMIC)	VCG1058
C	4682	CAPACITOR(CERAMIC)	VCG1058
C	4685	CAPACITOR(CERAMIC)	VCG1058
C	4701	CAPACITOR(CERAMIC)	VCG1057
C	4702	CAPACITOR(CERAMIC)	VCG1057
C	4703	CAPACITOR(CERAMIC)	VCG1057
C	4704		CKSSYB102K50
C	4705		CKSSYB102K50
C	4706		CKSSYB102K50
C	5104		CKSSYF104Z16
C	5105	CAPACITOR(CERAMIC)	VCG1057
C	5106	CAPACITOR(CERAMIC)	VCG1057
C	5107	CAPACITOR(CERAMIC)	VCG1057
C	5108	CAPACITOR(CERAMIC)	VCG1057
C	5109		CKSSYF104Z16
C	5110	CAPACITOR(CERAMIC)	VCG1057
C	5111	CAPACITOR(CERAMIC)	VCG1057
C	5112	CAPACITOR(CERAMIC)	VCG1057
C	5113		CKSSYF104Z16
C	5114		CKSSYF104Z16
C	5115	CAPACITOR(CERAMIC)	VCG1057
C	5116	CAPACITOR(CERAMIC)	VCG1057
C	5117		CCSSCH120J50
C	5118		CCSSCH120J50
C	5119		CKSSYB271K50
C	5120	CAPACITOR(CERAMIC)	VCG1057
C	5121	CHIP ELECT.CAPACITOR	CEVW101M4
C	5122	CHIP ELECT.CAPACITOR	CEVW101M4

Mark	No.	Description	Part No.
C	5123	CAPACITOR(CERAMIC)	VCG1057
C	5132	CAPACITOR(CERAMIC)	VCG1057
C	5133	CAPACITOR(CERAMIC)	VCG1057
C	5205	CAPACITOR(CERAMIC)	VCG1057
C	5209		CKSSYF104Z16
C	5210		CEVW101M16
C	5211		CKSSYB102K50
C	5212		CKSQYB225K10
C	5213	CAPACITOR(CERAMIC)	VCG1057
C	5216		CKSSYB102K50
C	5217	CAPACITOR(CERAMIC)	VCG1057
C	5218		CKSSYB102K50
C	5219		CKSSYB102K50
C	5222		CKSSYF104Z16
C	5223		CKSSYB102K50
C	5602	CAPACITOR(CERAMIC)	VCG1057
C	5603		CKSSYF104Z16
C	5604		CKSSYB103K16
C	5605		CKSSYB103K16
C	5606		CKSSYB103K16
C	5607		CKSSYB103K16
C	5608		CKSSYB103K16
C	5609		CKSSYB103K16
C	5610		CKSSYB103K16
C	5611		CKSSYB103K16
C	5612		CKSSYF104Z16
C	5613	CHIP ELECT.CAPACITOR	CEVW101M4
C	5614		CKSSYB103K16
C	5615		CKSSYF104Z16
C	5616		CKSSYF104Z16
C	5617		CKSSYB103K16
C	5622		CKSSYB103K16
C	5623		CKSSYB103K16
C	5624		CKSSYB103K16
C	5625		CKSSYB103K16
C	5626		CKSSYB103K16
C	5627		CKSSYB103K16
C	5628		CKSSYB103K16
C	5629		CKSSYB103K16
C	5630		CKSSYB103K16
C	5631		CKSSYB103K16
C	5632		CKSSYB103K16
C	5640		CCSSCH120J50
C	5641		CCSSCH120J50
C	5702	CAPACITOR(CERAMIC)	VCG1057
C	5704		CEVW1R0M50
C	5705		CKSSYB102K50
C	5706		CKSSYB102K50
C	5707	CAPACITOR(CERAMIC)	VCG1057
C	5708	CHIP ELECT.CAPACITOR	CEVW221M4
C	5801	CAPACITOR(CERAMIC)	VCG1057
C	5802		CKSSYB102K50
C	5803	CAPACITOR(CERAMIC)	VCG1057
C	5804	CHIP PX CAPACITOR	VCH1234
C	5805	CAPACITOR(CERAMIC)	VCG1057
C	5806	CAPACITOR(CERAMIC)	VCG1057
C	5807	CAPACITOR(CERAMIC)	VCG1057
C	5808		CKSSYF104Z16
C	5809		CKSSYF104Z16
C	5810		CKSSYF104Z16

Mark	No.	Description	Part No.
C	5811	CAPACITOR(CERAMIC)	VCG1057
C	5812	CAPACITOR(CERAMIC)	VCG1057
C	5814	CHIP ELECT.CAPACITOR	CEVW221M4
C	5815		CKSSYF104Z16
C	5816		DCH1201
C	5817		DCH1201
C	5818		DCH1201
C	5819	CAPACITOR(CERAMIC)	VCG1057
C	5820		CKSSYF104Z16
C	5821	CAPACITOR(CERAMIC)	VCG1057
C	5822		CKSSYF104Z16
C	5823		CKSSYB104K10
C	5824	CAPACITOR(CERAMIC)	VCG1057
C	5829		CKSSYF104Z16
C	5830		CKSSYF104Z16
C	5831		CKSRYF104Z16
C	5833		CKSSYF104Z16
C	5834	CAPACITOR(CERAMIC)	VCG1057
C	5835		CKSSYB102K50
C	5838		CKSSYF104Z16
C	5891	CHIP CAPACITOR	VCG1066
C	5892	CHIP CAPACITOR	VCG1066
C	5893	CHIP CAPACITOR	VCG1066
C	5894	CHIP CAPACITOR	VCG1066
C	5895	CHIP CAPACITOR	VCG1066
C	5896	CHIP CAPACITOR	VCG1066
C	5897	CHIP CAPACITOR	VCG1066
C	5898	CHIP CAPACITOR	VCG1066
C	6101	CAPACITOR(CERAMIC)	VCG1057
C	6102	CAPACITOR(CERAMIC)	VCG1057
C	6103	CAPACITOR(CERAMIC)	VCG1057
C	6104		CKSSYB102K50
C	6105		CKSSYB102K50
C	6106		CKSSYF104Z16
C	6107		CKSSYF104Z16
C	6108	CAPACITOR(CERAMIC)	VCG1057
C	6109	CAPACITOR(CERAMIC)	VCG1057
C	6110		CKSSYF104Z16
C	6111		CKSSYF104Z16
C	6112		CKSSYB102K50
C	6113		CKSSYB102K50
C	6114	CAPACITOR(CERAMIC)	VCG1057
C	6115	CAPACITOR(CERAMIC)	VCG1057
C	6116		CKSSYB102K50
C	6117	CAPACITOR(CERAMIC)	VCG1057
C	6118		CKSSYF104Z16
C	6119	CAPACITOR(CERAMIC)	VCG1057
C	6120	CAPACITOR(CERAMIC)	VCG1057
C	6121		DCH1201
C	6122	CAPACITOR(CERAMIC)	VCG1057
C	6123	CHIP ELECT.CAPACITOR	CEVW221M4
C	6124		CKSSYF104Z16
C	6125		CKSSYF104Z16
C	6126		CKSSYF104Z16
C	6127	CHIP PX CAPACITOR	VCH1234
C	6128	CAPACITOR(CERAMIC)	VCG1057
C	6129	CAPACITOR(CERAMIC)	VCG1057
C	6130	CAPACITOR(CERAMIC)	VCG1057
C	6131	CAPACITOR(CERAMIC)	VCG1057
C	6132	CAPACITOR(CERAMIC)	VCG1057

Mark	No.	Description	Part No.
C	6133		CKSSYB102K50
C	6134		CKSSYB102K50
C	6135		CKSSYF104Z16
C	6136		CKSSYF104Z16
C	6137	CAPACITOR(CERAMIC)	VCG1057
C	6138	CAPACITOR(CERAMIC)	VCG1057
C	6140	CAPACITOR(CERAMIC)	VCG1057
C	6141	CAPACITOR(CERAMIC)	VCG1057
C	6142	CAPACITOR(CERAMIC)	VCG1057
C	6143	CHIP ELECT.CAPACITOR	CEVW221M4
C	6144	CAPACITOR(CERAMIC)	VCG1057
C	6150	CAPACITOR(CERAMIC)	VCG1057
C	6151		CKSSYB102K50
C	6152	CAPACITOR(CERAMIC)	VCG1057
C	6153		CKSSYB102K50
C	6154		CKSSYF104Z16
C	6155	CAPACITOR(CERAMIC)	VCG1057
C	6156		CKSSYB102K50
C	6157		CKSSYF104Z16
C	6158	CAPACITOR(CERAMIC)	VCG1057
C	6159	CAPACITOR(CERAMIC)	VCG1057
C	6160	CAPACITOR(CERAMIC)	VCG1057
C	6161		CKSSYB102K50
C	6162		CKSSYF104Z16
C	6163	CAPACITOR(CERAMIC)	VCG1057
C	6164		CKSSYF104Z16
C	6165	CAPACITOR(CERAMIC)	VCG1057
C	6166	CHIP ELECT.CAPACITOR	CEVW221M4
C	6167		CKSSYF104Z16
C	6169	CAPACITOR(CERAMIC)	VCG1057
C	6170	CAPACITOR(CERAMIC)	VCG1057
C	6171	CAPACITOR(CERAMIC)	VCG1057
C	6172	CAPACITOR(CERAMIC)	VCG1057
C	6173	CAPACITOR(CERAMIC)	VCG1057
C	6174		DCH1201
C	6175		DCH1201
C	6303	CHIP ELECT.CAPACITOR	CEVW221M4
C	6304	CAPACITOR(CERAMIC)	VCG1057
C	6305		CKSSYF104Z16
C	6306		CKSSYB102K50
C	6307		CKSSYB102K50
C	6308	CAPACITOR(CERAMIC)	VCG1057
C	6309		CKSSYF104Z16
C	6310		CKSSYB102K50
C	6311	CAPACITOR(CERAMIC)	VCG1057
C	6312	CAPACITOR(CERAMIC)	VCG1057
C	6313	CAPACITOR(CERAMIC)	VCG1057
C	6315		DCH1201
C	6316	CHIP PVO CAPACITOR	VCH1268
C	6317		CKSSYF104Z16
C	6318		CKSSYB103K16
C	6319		CKSSYF104Z16
C	6320		CKSSYB102K50
C	6321		CKSSYB102K50
C	6322		CKSSYF104Z16
C	6323	CAPACITOR(CERAMIC)	VCG1057
C	6324		CKSSYB102K50
C	6325		CKSSYF104Z16
C	6326		CKSSYB102K50
C	6327	CAPACITOR(CERAMIC)	VCG1057

Mark	No.	Description	Part No.
	C 6328		CKSSYF104Z16
	C 6329		CKSSYF104Z16
	C 6330		CKSSYB102K50
	C 6331	CAPACITOR(CERAMIC)	VCG1057
	C 6332		CKSSYF104Z16
	C 6333		CKSSYF104Z16
	C 6334		CKSSYB102K50
	C 6335	CAPACITOR(CERAMIC)	VCG1057
	C 6336		CKSSYF104Z16
	C 6337	CAPACITOR(CERAMIC)	VCG1057
	C 6338		CKSSYB102K50
	C 6339		CKSSYF104Z16
	C 6340		CKSSYB102K50
	C 6341		CKSSYF104Z16
	C 6342	CAPACITOR(CERAMIC)	VCG1057
	C 6343	CHIP PX CAPACITOR	VCH1234
	C 6346		CKSSYB103K16
	C 6349	CHIP ELECT.CAPACITOR	CEVW101M4
	C 6352		CKSSYB102K50
	C 6354		CKSSYF104Z16
	C 6355	CAPACITOR(CERAMIC)	VCG1057
	C 6358	CAPACITOR(CERAMIC)	VCG1057
	C 6359		CKSSYF104Z16
	C 6360		CKSSYB102K50
	C 6361		CKSSYB102K50
	C 6362		CKSSYF104Z16
	C 6363	CAPACITOR(CERAMIC)	VCG1057
	C 6364	CAPACITOR(CERAMIC)	VCG1057
	C 6365	CAPACITOR(CERAMIC)	VCG1057
	C 6366		CKSSYF104Z16
	C 6367		CKSSYB102K50
	C 6368		CKSSYF104Z16
	C 6369	CAPACITOR(CERAMIC)	VCG1057
	C 6370		CKSSYB102K50
	C 6371		CKSSYF104Z16
	C 6372	CAPACITOR(CERAMIC)	VCG1057
	C 6373		CKSSYB102K50
	C 6375	CAPACITOR(CERAMIC)	VCG1057
	C 6377	CAPACITOR(CERAMIC)	VCG1057
	C 6379	CAPACITOR(CERAMIC)	VCG1057
	C 6381		CCSSCH100D50
	C 6382		CCSSCH100D50
	C 6383	CAPACITOR(CERAMIC)	VCG1057
	C 6384		DCH1201
	C 6385	CAPACITOR(CERAMIC)	VCG1057
	C 6386	CAPACITOR(CERAMIC)	VCG1057
	C 6387	CAPACITOR(CERAMIC)	VCG1057
	C 6388	CAPACITOR(CERAMIC)	VCG1057
	C 6389	CAPACITOR(CERAMIC)	VCG1057
	C 6393	CAPACITOR(CERAMIC)	VCG1057
	C 6394		CKSSYF104Z16
	C 6403	CAPACITOR(CERAMIC)	VCG1057
	C 6404	CAPACITOR(CERAMIC)	VCG1057
	C 6405		CKSSYB103K16
	C 6406	CAPACITOR(CERAMIC)	VCG1057
	C 6407		CKSSYF104Z16
	C 6408	CAPACITOR(CERAMIC)	VCG1057
	C 6409	CAPACITOR(CERAMIC)	VCG1057
	C 6416		CKSSYF104Z16
	C 6417		CKSSYF104Z16

Mark	No.	Description	Part No.
	C 6418		CKSSYF104Z16
	C 6420		CKSQYB225K10
	C 6421		DCH1201
	C 6422	CAPACITOR(CERAMIC)	VCG1057
	C 6423		CKSSYB102K50
	C 6424	CHIP ELECT.CAPACITOR	CEVW101M4
	C 6425		CKSSYB102K50
	C 6426		CKSQYB475K6R3
	C 6427		DCH1201

E VDEC ASSY

MISCELLANEOUS

Mark	No.	Description	Part No.
⚠	IC 101	(A,37,79) REGULATOR IC (3.3V)	MM1563DF
⚠	IC 102	(A,43,97) REGULATOR IC (1.5V)	MM1561FF
⚠	IC 103	(A,36,70) REGULATOR IC	S-1112B50MC-L7J
	IC 104	(A,81,69) 3DY/C SEPA & VDEC IC	UPD64015AGM-UEU
	IC 105	(B,82,30) SDRAM(16M)	HY57V161610FTP-6
	Q 102	(A,34,26) TRANSISTOR	2SA1576A
	Q 103	(A,56,26) TRANSISTOR	2SA1576A
	Q 106	(A,36,48) TRANSISTOR	2SC4081
	Q 107	(A,58,48) TRANSISTOR	2SC4081
	L 101	(A,34,35) INDUCTOR	ATL7015
	L 102	(A,56,35) INDUCTOR	ATL7015
	L 105	(A,35,41) INDUCTOR	VTL1180
	L 106	(A,55,42) INDUCTOR	VTL1180
	F 101	(A,40,74) EMI FILTER	DTL1106
	F 102	(A,49,82) EMI FILTER	DTL1106
	F 103	(A,56,93) EMI FILTER	DTL1106
	F 104	(B,56,96) EMI FILTER	DTL1106
	F 105	(A,49,85) EMI FILTER	DTL1106
	F 106	(A,101,70) EMI FILTER	DTL1106
	F 107	(B,109,30) EMI FILTER	DTL1106
	X 101	(A,106,63) CRYSTAL RESONATOR	VSS1220
	CN 103	(A,117,112) CONNECTOR POST	B2B-PH-K-S
	CN 104	(A,59,112) CONNECTOR	VKN2048
	CN 106	(A,43,8) CONNECTOR	HLEM24S-1

RESISTORS

Mark	No.	Description	Part No.
	R 102	(A,33,99)	RS1/16SS103J
	R 103	(A,29,90)	RS1/16SS0R0J
	R 104	(A,58,21)	RS1/16SS470J
	R 105	(A,38,22)	RS1/16SS470J
	R 113	(A,35,99)	RS1/16SS103J
	R 124	(A,37,28)	RS1/16SS331J
	R 125	(A,57,28)	RS1/16SS331J
	R 128	(A,34,29)	RS1/16S4700F
	R 129	(A,55,30)	RS1/16S4700F
	R 133	(A,46,79)	RS1/10S0R0J
	R 136	(A,34,46) CHIP RESISTOR	RS1/16SS1801F
	R 137	(A,55,46) CHIP RESISTOR	RS1/16SS1801F
	R 140	(A,33,48)	RS1/16SS100J
	R 141	(A,55,48)	RS1/16SS100J
	R 144	(A,37,50)	RS1/16SS681J
	R 145	(A,59,50)	RS1/16SS681J
	R 146	(A,45,50)	RS1/16SS0R0J
	R 147	(A,52,50)	RS1/16SS0R0J
	R 148	(A,34,67)	RS1/16SS333J
	R 149	(A,60,79)	RS1/16SS473J
	R 150	(A,60,77)	RS1/16SS473J

Mark	No.	Description	Part No.
	R 151	(A,65,75)	RS1/16SS473J
	R 152	(A,62,84) RESISTOR ARRAY	RAB4CQ103J
	R 154	(A,69,45) RESISTOR ARRAY	RAB4CQ101J
	R 155	(A,72,45) RESISTOR ARRAY	RAB4CQ101J
	R 156	(A,75,45) RESISTOR ARRAY	RAB4CQ101J
	R 157	(A,117,96)	RS1/10S0R0J
	R 158	(A,78,45) RESISTOR ARRAY	RAB4CQ101J
	R 159	(A,81,46)	RS1/16SS101J
	R 160	(A,85,45) RESISTOR ARRAY	RAB4CQ101J
	R 161	(A,113,96)	RS1/10S0R0J
	R 162	(A,89,46) RESISTOR ARRAY	RAB4CQ101J
	R 163	(A,85,89)	RS1/16SS0R0J
	R 164	(A,89,93) RESISTOR ARRAY	RAB4CQ101J
	R 165	(A,93,46) RESISTOR ARRAY	RAB4CQ101J
	R 167	(A,103,53) RESISTOR ARRAY	RAB4CQ101J
	R 169	(A,102,61)	RS1/16SS101J
	R 170	(B,95,77)	RS1/16SS103J
	R 171	(B,97,77)	RS1/16SS473J
	R 174	(A,72,85)	RS1/16SS103J
	R 175	(A,71,85)	RS1/16SS103J
	R 176	(A,92,93) RESISTOR ARRAY	RAB4CQ101J
	R 180	(A,97,49)	RS1/16SS101J
	R 181	(A,96,45)	RS1/16SS101J
	R 182	(A,52,107)	RS1/16SS0R0J
	R 183	(A,53,107)	RS1/16SS0R0J
	R 184	(A,56,106)	RS1/16SS0R0J
	R 185	(A,58,108)	RS1/16SS0R0J
	R 186	(A,52,102)	RS1/16SS472J
	R 187	(A,53,102)	RS1/16SS472J

CAPACITORS

Mark	No.	Description	Part No.
	C 101	(B,22,74)	CKSSYF104Z16
	C 102	(B,36,67)	CEVW101M16
	C 103	(B,21,84) CAPACITOR(CERAMIC)	VCG1057
	C 106	(B,36,86) CHIP ELECT.CAPACITOR	CEVW221M4
	C 107	(A,31,82) CAPACITOR(CERAMIC)	VCG1057
	C 108	(A,36,96) CAPACITOR(CERAMIC)	VCG1057
	C 109	(A,38,30) CAPACITOR(CERAMIC)	VCG1057
	C 112	(A,58,30) CAPACITOR(CERAMIC)	VCG1057
	C 113	(B,21,79)	CKSSYF104Z16
	C 114	(B,22,68) CAPACITOR(CERAMIC)	VCG1057
	C 115	(B,36,76)	CEVW101M16
	C 116	(B,31,59) CHIP ELECT.CAPACITOR	CEVW221M4
	C 117	(A,34,33)	CCSSCH100D50
	C 118	(A,55,33)	CCSSCH100D50
	C 121	(A,37,82)	CKSSYB102K50
	C 122	(A,47,99)	CKSSYB102K50
	C 123	(A,37,35)	CCSRCH7R0D50
	C 124	(A,56,37)	CCSRCH7R0D50
	C 127	(A,34,38)	CCSSCH820J50
	C 128	(A,55,38)	CCSSCH820J50
	C 130	(A,42,78)	CKSQYB225K10
	C 131	(A,49,97)	CKSQYB225K10
	C 133	(A,35,43)	CCSRCH7R0D50
	C 134	(A,58,42)	CCSRCH7R0D50
	C 137	(A,34,45)	CCSSCH220J50
	C 138	(A,55,45)	CCSSCH220J50
	C 141	(A,38,46) CAPACITOR(CERAMIC)	VCG1057
	C 142	(A,59,46) CAPACITOR(CERAMIC)	VCG1057
	C 146	(A,60,60)	CKSQYB104K50
	C 147	(A,59,67)	CKSQYB103K50

Mark	No.	Description	Part No.
	C 148	(A,58,64)	CKSQYB104K50
	C 149	(A,59,72)	CKSQYB103K50
	C 150	(A,34,70) CAPACITOR(CERAMIC)	VCG1058
	C 151	(A,46,70) CHIP ELECT.CAPACITOR	CEVW221M4
	C 153	(A,64,72)	CKSSYF104Z16
	C 154	(A,63,71)	CKSSYF104Z16
	C 155	(A,64,69)	CKSSYF104Z16
	C 156	(A,63,65)	CKSSYF104Z16
	C 157	(A,64,59)	CKSSYF104Z16
	C 158	(A,66,68)	CKSSYF104Z16
	C 159	(A,33,73) CAPACITOR(CERAMIC)	VCG1057
	C 160	(A,65,64)	CKSSYB102K50
	C 161	(A,54,78) CHIP ELECT.CAPACITOR	CEVW221M4
	C 162	(B,67,74)	CKSSYF104Z16
	C 163	(B,67,73)	CKSSYF104Z16
	C 164	(B,74,72)	CKSSYF104Z16
	C 165	(B,67,71)	CKSSYF104Z16
	C 166	(B,74,70)	CKSSYF104Z16
	C 167	(B,67,68)	CKSSYF104Z16
	C 168	(B,74,67)	CKSSYF104Z16
	C 169	(B,67,66)	CKSSYF104Z16
	C 170	(B,74,65)	CKSSYF104Z16
	C 171	(B,67,65)	CKSSYF104Z16
	C 172	(B,74,62)	CKSSYF104Z16
	C 173	(B,67,61)	CKSSYF104Z16
	C 174	(B,74,60)	CKSSYF104Z16
	C 175	(B,67,58)	CKSSYF104Z16
	C 176	(A,63,75) CAPACITOR(CERAMIC)	VCG1057
	C 177	(A,63,79) CAPACITOR(CERAMIC)	VCG1057
	C 178	(B,68,79)	CEVW100M16
	C 180	(A,62,75)	CKSSYB102K50
	C 182	(A,62,68) CAPACITOR(CERAMIC)	VCG1057
	C 183	(A,65,62) CAPACITOR(CERAMIC)	VCG1057
	C 184	(A,39,72) CAPACITOR(CERAMIC)	VCG1057
	C 185	(A,63,60)	CKSSYF104Z16
	C 186	(A,69,84) CAPACITOR(CERAMIC)	VCG1057
	C 187	(A,67,54) CAPACITOR(CERAMIC)	VCG1057
	C 188	(A,74,84) CAPACITOR(CERAMIC)	VCG1057
	C 189	(A,71,50) CAPACITOR(CERAMIC)	VCG1057
	C 191	(A,76,84) CAPACITOR(CERAMIC)	VCG1057
	C 192	(A,76,50) CAPACITOR(CERAMIC)	VCG1057
	C 193	(A,79,84) CAPACITOR(CERAMIC)	VCG1057
	C 194	(A,80,50) CAPACITOR(CERAMIC)	VCG1057
	C 195	(A,81,85) CAPACITOR(CERAMIC)	VCG1057
	C 196	(A,83,48) CAPACITOR(CERAMIC)	VCG1057
	C 197	(A,112,98)	CKSRYF104Z25
	C 198	(A,84,84) CAPACITOR(CERAMIC)	VCG1057
	C 199	(A,87,50) CAPACITOR(CERAMIC)	VCG1057
	C 200	(A,86,84) CAPACITOR(CERAMIC)	VCG1057
	C 201	(A,91,52) CAPACITOR(CERAMIC)	VCG1057
	C 202	(A,93,55) CAPACITOR(CERAMIC)	VCG1057
	C 203	(A,97,76)	CKSSYB102K50
	C 204	(A,98,66) CAPACITOR(CERAMIC)	VCG1057
	C 205	(B,65,87)	CKSSYB102K50
	C 206	(B,58,90) CHIP PV CAPACITOR	VCH1246
	C 207	(B,64,87) CAPACITOR(CERAMIC)	VCG1057
	C 208	(A,97,79) CAPACITOR(CERAMIC)	VCG1057
	C 209	(A,96,83) CAPACITOR(CERAMIC)	VCG1057
	C 210	(A,97,77) CAPACITOR(CERAMIC)	VCG1057
	C 211	(A,97,71) CAPACITOR(CERAMIC)	VCG1057

Mark	No.	Description	Part No.
C	212	(A,98,71) CAPACITOR(CERAMIC)	VCG1057
C	213	(A,66,58)	CKSSYF104Z16
C	214	(A,97,66) CAPACITOR(CERAMIC)	VCG1057
C	215	(B,54,80) CHIP ELECT.CAPACITOR	CEVW221M4
C	216	(A,100,61) CAPACITOR(CERAMIC)	VCG1057
C	217	(A,97,56) CAPACITOR(CERAMIC)	VCG1057
C	218	(A,109,61)	CCSRCH100D50
C	219	(A,109,65)	CCSRCH100D50
C	220	(B,73,21) CAPACITOR(CERAMIC)	VCG1057
C	221	(B,88,22) CAPACITOR(CERAMIC)	VCG1057
C	222	(B,83,22) CAPACITOR(CERAMIC)	VCG1057
C	223	(B,74,21) CAPACITOR(CERAMIC)	VCG1057
C	224	(B,88,39) CAPACITOR(CERAMIC)	VCG1057
C	225	(B,81,39) CAPACITOR(CERAMIC)	VCG1057
C	226	(A,95,65)	CKSSYF104Z16
C	228	(A,65,82) CAPACITOR(CERAMIC)	VCG1057
C	232	(A,59,81)	DCH1201
C	233	(A,62,80)	CKSSYB102K50
C	234	(A,37,62)	CEVW101M16
C	235	(A,68,54)	CKSSYB102K50
C	236	(A,76,51)	CKSSYB102K50
C	237	(A,82,46)	CKSSYF104Z16
C	238	(A,87,52)	CKSSYF104Z16
C	239	(A,97,62)	CKSSYB102K50
C	240	(A,97,68)	CKSSYB102K50
C	241	(A,97,69)	CKSSYF104Z16
C	242	(A,96,74)	CKSSYF103Z50
C	243	(A,96,84)	CKSSYB102K50
C	244	(A,90,85)	CKSSYF104Z16
C	245	(A,81,84)	CKSSYF104Z16
C	246	(A,69,85)	CKSSYB102K50
C	247	(A,67,82)	CKSSYB102K50
C	248	(B,103,28) CHIP PX CAPACITOR	VCH1234
C	249	(B,91,22)	CKSSYF104Z16
C	250	(B,81,22)	CKSSYB102K50
C	251	(B,82,39)	CKSSYB102K50
C	252	(B,89,39)	CKSSYF104Z16
C	253	(B,28,6)	CKSSYF104Z16
C	254	(B,37,6)	CKSSYF104Z16

F DVUB ASSY

MISCELLANEOUS

Mark	No.	Description	Part No.
L	904	(B,216,21) CHIP FERRITE BEADS	VTL1169
L	905	(B,218,10) CHIP FERRITE BEADS	VTL1169
L	907	(B,219,33) CHIP FERRITE BEADS	VTL1169
L	908	(B,215,33) CHIP FERRITE BEADS	VTL1169
JA	901	(A,203,59) 1394-TERMINAL	VKN2028
JA	902	(A,202,15) USB CONNECTOR	VKB1226
JA	903	(A,218,37) USB CONNECTOR	VKB1227
CN	901	(A,235,57) CONNECTOR	VKN1932
CN	902	(A,235,30) CONNECTOR	VKN1936

RESISTORS

Mark	No.	Description	Part No.
R	901	(A,216,53)	RS1/16S0R0J
R	902	(A,216,57)	RS1/16S0R0J
R	903	(A,219,61)	RS1/16S0R0J
R	904	(A,219,65)	RS1/16S0R0J
R	905	(A,220,17)	RS1/16S330J
R	906	(A,220,13)	RS1/16S330J
R	907	(A,224,39)	RS1/16S330J
R	908	(A,230,57)	RS1/16S0R0J
R	909	(A,224,43)	RS1/16S330J
R	912	(A,226,69)	RS1/16S0R0J

CAPACITORS

Mark	No.	Description	Part No.
C	905	(A,231,29)	CKSRYF105Z10
C	906	(A,231,32)	CKSRYF105Z10
C	907	(B,220,51)	CKSRYF104Z25
C	908	(B,211,67)	CKSRYF104Z25

G POWER SUPPLY ASSY

POWER SUPPLY ASSY has no service part.